S. Hrg. 101-105

THE NEED FOR URANIUM ENRICHMENT ENTERPRISE RESTRUCTURING AND URANIUM MINING REVITALIZATION

HEARINGS

BEFORE THE

SUBCOMMITTEE ON
ENERGY RESEARCH AND DEVELOPMENT

OF THE

COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

FIRST SESSION

ON

S. 83

TO ESTABLISH THE AMOUNT OF COSTS OF THE DEPARTMENT OF ENERGY'S URANIUM ENRICHMENT PROGRAM THAT HAVE NOT PREVIOUSLY BEEN RECOVERED FROM ENRICHMENT CUSTOMERS IN THE CHARGES OF THE DEPARTMENT OF ENERGY TO ITS CUSTOMERS

Amendment No. 6

TO ESTABLISH A WHOLLY-OWNED GOVERNMENT CORPORATION TO MANAGE THE NATION'S URANIUM ENRICHMENT ENTERPRISE, OPERATING AS A CONTINUING, COMMERCIAL ENTERPRISE ON A PROFITABLE AND EFFICIENT BASIS

Amendment No. 10

TO PROVIDE FOR URANIUM REVITALIZATION AND TAILINGS RECLAMATION

APRIL 19, 20, AND MAY 11, 1989

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Committee on Energy and Natural Resources

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CONTENTS

Page

S. 83 3

Amendment No. 6 5

Amendment No. 10 169

Hearings:

- April 19, 1989 1
- April 20, 1989 117
- May 11, 1989 165

WEDNESDAY, APRIL 19, 1989

STATEMENTS

Burns, Hon. Conrad, U.S. Senator from Montana 72

Domenici, Hon. Pete V., U.S. Senator from New Mexico 73

Farley, Joseph M., executive vice president-nuclear, the Southern Co., on behalf of the Edison Electric Institute and the American Nuclear Energy Council 75

Ford, Hon. Wendell, H., U.S. Senator from Kentucky 1

Johnston, Hon. J. Bennett, U.S. Senator from Louisiana 51

McClure, Hon. James A., U.S. Senator from Idaho 70

McConnell, Hon. Mitch, U.S. Senator from Kentucky 62

Montange, Charles H., counsel, National Taxpayers Union, accompanied by Jill Lancelot 102

Moore, W. Henson, Deputy Secretary of Energy, Department of Energy 53

Rushton, Dr. James E., director, Enrichment Business Services, Martin Marietta Energy Systems, Inc 90

THURSDAY, APRIL 20, 1989

STATEMENTS

Badger, William A., commissioner, Maryland Public Service Commission, accompanied by Julian Wood 145

Brown, Charles A., vice president, procurement, Virginia Power 134

Dean, Alan L., fellow, National Academy of Public Aministration, accompanied by Dr. Harold Seidman 117

Ford, Hon. Wendell H., U.S. Senator from Kentucky 117

Johnston, Hon. J. Bennett, U.S. Senator from Louisiana 127

Seidman, Dr. Harold, fellow, National Academy of Public Administration 126

THURSDAY, MAY 11, 1989

STATEMENTS

Bayne, J. Phillip, president and chief operating officer, New York Power Authority, on behalf of Edison Electric Institute, the American Nuclear Energy Council, and the American Public Power Association 256

Domenici, Hon. Pete V., U.S. Senator from New Mexico 227

Ford, Hon. Wendell H., U.S. Senator from Kentucky 228

Grandey, Gerald W., president, Uranium Producers of America 267

Johnston, Hon. J. Bennett, U.S. Senator from Louisiana 165

Merklein, Dr. Helmut A., Administrator, Energy Information Administration, Department of Energy, accompanied by John C. Geidl, and Howard L. Walton 200

Page
Sewell, Philip G., Deputy Assistant Secretary for Uranium Enrichment, Department of Energy 216
Simpson, Hon. Alan K., U.S. Senator from Wyoming 234
Wallop, Hon. Macolm, U.S. Senator from Wyoming 232

APPENDIXES

Appendix I

Responses to additional questions 289

Appendix II

Additional material submitted for the record 475

THE NEED FOR URANIUM ENRICHMENT ENTERPRISE RESTRUCTURING AND URANIUM MINING REVITALIZATION

WEDNESDAY, APRIL 19, 1989

U.S. SENATE,
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:05 p.m., in room SD-366, Dirksen Senate Office Building, Hon. Wendell H. Ford, presiding.

OPENING STATEMENT OF HON. WENDELL H. FORD, U.S. SENATOR FROM KENTUCKY

Senator FORD. Good afternoon, ladies and gentlemen. I appreciate your attendance this afternoon. And I apologize for being a little bit tardy, but I am not as swift as I used to be, Mr. Secretary. It takes me a little longer to run 100 yards than it used to.

I am pleased that you are here today, and I am pleased to hold this hearing on legislation to restructure the uranium enrichment enterprise. This is an important and timely issue, but not a new one.

It was five years ago that the Department of Energy had under 50 percent of the world market share, and it began its recovery strategy to improve the competitiveness of the enterprise.

It was five years ago that the General Accounting Office first recommended that the uranium enrichment program be restructured to provide adequate flexibility for competing with foreign suppliers.

It was five years ago that the House Tri-Committee panel of business experts recommended that "Congress and the Secretary of Energy should take steps to establish a private business management structure for the enrichment enterprise."

In the last five years, much has changed in the way DOE does business, but it isn't enough. DOE continues to operate like a monopoly, even as the market gets increasingly competitive.

DOE's competitors continue to market aggressively and successfully both in the United States and abroad. In the past, we considered our strongest competition to be the European consortia of Urenco and Eurodif. However, it has recently come to the attention of the committee that the Soviet Union is ready, willing and able to become a contender in this highly competitive world enrichment market. And other countries like China and Japan are likely to jump into the ring in the future.

A consensus has developed that the enrichment program must be restructured in order to compete for business in the future and ensure a viable domestic supply of enrichment services. The legislation that was passed by the Senate twice during the 100th Congress restructures the enrichment enterprise as a government corporation. I have reintroduced this legislation this year and hope to move it swiftly to passage on the Senate floor.

The need for restructuring legislation is greater now than it has been in the past. DOE once operated with the flexibility of a large stockpile of enriched uranium. That stockpile is almost gone. In fact, in the near term, if DOE does not receive additional funds for power contained in a pending supplemental appropriation, it faces the possibility of missing deliveries before the end of this fiscal year. One reason utilities have stayed with DOE, despite its high prices, has been reliability. Now this is threatened.

In the long term, DOE is less secure in its market than it has been in the past. Each April 1 utilities give notice for terminations of deliveries 10 years in the future. So far 16 utilities have terminated deliveries of separative work approaching $1 billion worth for 1996 through 1999. That is $1 billion worth of business that may leave our borders. We can't let that happen without a fight.

The DOE program is at a crossroads in my opinion. We can continue down the path we are on and watch our business and our jobs flow to other nations, or we can march down the path that we have started in the 100th Congress to establish a competitive, profitable and long-term business for the enrichment program.

Most agree that the second path is preferable for our jobs, for our energy policy and for our taxpayers. The Senate and the House must act swiftly to ensure that there will be an efficient, competitive and profitable enrichment enterprise for the future.

[The text of S. 83 and Amendment No. 6 follow:]

II

101st CONGRESS
1st Session

S. 83

To establish the amount of costs of the Department of Energy's uranium enrichment program that have not previously been recovered from enrichment customers in the charges of the Department of Energy to its customers.

IN THE SENATE OF THE UNITED STATES

JANUARY 25 (legislative day, JANUARY 3), 1989

Mr. FORD (for himself and Mr. JOHNSTON) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

---

A BILL

To establish the amount of costs of the Department of Energy's uranium enrichment program that have not previously been recovered from enrichment customers in the charges of the Department of Energy to its customers.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 161v. of the Atomic Energy Act of 1954, as amended, (42 U.S.C. 2201(v)) is further amended by inserting after the phrase "over a reasonable period of time: . . ." the following: "*And provided further,* That the Government's costs of providing services under paragraphs A and B of this subsection that have been incurred and not recovered prior to fiscal year 1987 of the United States are hereby determined to be $364,000,000, and such amount shall be recovered in charges for services under paragraphs A and B within a twenty-year period commencing on October 1, 1989, along with interest on the unpaid balance at a rate equal to the average yield on long-term Government obligations as determined by the Secretary of the Treasury on October 1, 1989:".

AMENDMENT NO. 6 Ex.________ Calendar No.________

Purpose: To establish a wholly-owned Government corporation to manage the Nation's uranium enrichment enterprise, operating as a continuing, commercial enterprise on a profitable and efficient basis.

IN THE SENATE OF THE UNITE

S. 83

To establish the amou
Energy's uranium enrichmen
recovered from enrichment
Department of Energy to it

AMENDMENT NO. 6
By FORD
Bill/Res. No. S. 83
45 pages

FEB 23 LEG. DAY JAN 3 '89

( ) Referred to the Committee on ENERGY AND NATURAL RESOURCES and ordered to be printed

Intended to be proposed by Mr. FORD (for himself and Mr. JOHNSTON)

Viz: Strike everything after the enacting clause and insert the following in lieu thereof:

SEC. 110. SHORT TITLE -- This Act may be cited as the 'Uranium Enrichment Act of 1989.'

SEC. 111. DELETION OF SECTION 161v. -- Subsection 161v. of the Atomic Energy Act of 1954, as amended, is deleted and the remaining subsections are relettered accordingly.

"SEC. 112. REDIRECTION OF THE URANIUM ENRICHMENT ENTERPRISE OF THE UNITED STATES. --

"The Atomic Energy Act of 1954, as amended (42 U.S.C. Sections 2011-2296) is further amended by-

"a. inserting at the commencement thereof after the words 'ATOMIC ENERGY ACT OF 1954':

"'TITLE I - ATOMIC ENERGY'; and

"b. adding at the end thereof the following:

"'TITLE II - UNITED STATES ENRICHMENT CORPORATION

"'CHAPTER 21. FINDINGS

"'SEC. 1101. FINDINGS. -- The Congress of the United States finds that:

"'a. The enrichment of uranium is essential to the national security and energy security of the United States.

"'b. A competitive, well-managed and efficient enrichment enterprise provides important economic benefits to the United States and contributes to a highly favorable foreign trade balance.

"'c. A strong United States enrichment enterprise promotes Unites States nonproliferation policies by requiring accountability for United States enriched uranium.

"'d. The operation of uranium enrichment facilities must meet high standards for environmental health and safety.

"'e. The operation and management of a uranium enrichment enterprise requires a commercial business orientation in order to engender customer support and confidence, and customers, rather than the taxpayers at large, should bear the costs of uranium enrichment services.

"'f. The optimal level of expenditures for the uranium enrichment enterprise fluctuates and cannot be accurately predicted or efficiently financed if subject to annual authorization and appropriation.

"'g. Flexibility is essential to adapt business operations to a competitive marketplace.

"'h. The events of the recent past, including the emergence of foreign competition, have brought new and unforeseen forces to bear upon the management and operation of the Government's uranium enrichment enterprise.

"'i. The present operation of the uranium enrichment enterprise must be changed so as to further the national interest in the enterprise and respond to the competitive demand placed upon it by market forces, while continuing to meet the paramount objective of ensuring the Nation's common defense and security.

"'CHAPTER 22. DEFINITIONS, ESTABLISHMENT OF CORPORATION AND PURPOSES

"'SEC. 1201. DEFINITIONS. -- For the purpose of this title:

"'a. The term ''Secretary'' means the Secretary of Energy.

"'b. The term ''Department'' means the Department of Energy of the United States.

"'c. The term ''Administrator'' means the chief executive officer of the United States Enrichment Corporation.

"'d. The term ''Corporation'' means the United States Enrichment Corporation.

"'e. The term ''Advisory Board'' means the appointed members of the official advisory panel appointed by the President pursuant to section 1503 of this title.

"'f. The term ''uranium enrichment'' means the separation of uranium of a given isotopic content into two components, one having a higher percentage of a fissile isotope and one having a lower percentage.

"'SEC. 1202. ESTABLISHMENT OF THE CORPORATION. --

"'a. There is hereby created a body corporate to be known as the ''United States Enrichment Corporation''.

"'b. The Corporation shall --

"'(1) be established as a wholly-owned Government corporation subject to the Government Corporation Control Act, as amended (31 U.S.C. section 9101-9109), except as otherwise provided herein; and

"'(2) be an agency and instrumentality of the United States.

"'SEC. 1203. PURPOSES. -- The Corporation is created for the following purposes:

"'(1) to acquire feed material for uranium enrichment, enriched uranium and the Department's uranium enrichment and related facilities;

"'(2) to operate, and as required by business conditions, to expand or construct facilities for uranium enrichment or both;

"'(3) to market and sell enriched uranium and uranium enrichment and related services to--

"'(A) the Department for governmental purposes; and

"'(B) qualified domestic and foreign persons;

"'(4) to conduct research and development for purposes of identifying, evaluating, improving and testing processes for uranium enrichment;

"'(5) to operate, as a continuing, commercial enterprise, on a profitable and efficient basis;

"'(6) to establish a corporate structure that is self-financing and would obviate the need for appropriations or other sources of Government financing after enactment of this title;

"'(7) to maintain a reliable and economical domestic source of enrichment services;

"'(8) to conduct its activities in a manner consistent with the health and safety of the public;

"'(9) to continue to meet the paramount objectives of ensuring the Nation's common defense and security (including consideration of United States policies concerning nonproliferation of atomic weapons and other nonpeaceful uses of atomic energy); and

"'(10) to take all other lawful action in furtherance of the foregoing purposes.

"'CHAPTER 23. CORPORATE OFFICES

"'SEC. 1301. CORPORATE OFFICES. --

"'The Corporation shall maintain an office for the service of process and papers in the District of Columbia, and shall be deemed, for purposes of venue in civil actions, to be a resident thereof. The Corporation may establish offices in such other place or places as it may deem necessary or appropriate in the conduct of its business.

"'CHAPTER 24. POWERS AND DUTIES OF THE CORPORATION

"'SEC. 1401. SPECIFIC CORPORATE POWERS AND DUTIES. --

"'The Corporation --

"'a. shall perform uranium enrichment or provide for such enrichment to be performed by others at facilities of the Corporation. The Corporation shall continue in effect contracts in existence as of the date of the enactment of this title between the Department and persons currently under contract to perform uranium enrichment at facilities of the Department;

"'b. shall conduct, or provide for the conduct of, research and development activities related to the isotopic separation of uranium as the Corporation deems necessary or advisable for purposes of maintaining the Corporation as a continuing, commercial enterprise operating on a profitable and efficient basis;

"'c. may acquire or distribute enriched uranium, feed material for uranium enrichment or depleted uranium in transactions with-

"'(1) persons licensed under sections 53, 63, 103, or 104 of title I in accordance with the licenses held by such persons;

"'(2) persons in accordance with, and within the period of, an agreement for cooperation arranged pursuant to section 123 of title I; or

"'(3) as otherwise authorized by law;

"'d. may --

"'(1) enter into contracts with persons licensed under section 53, 63, 103, or 104 of title I for such periods of time as the Corporation may deem necessary or desirable, to provide uranium or uranium enrichment and related services; and

"'(2) enter into contracts to provide uranium or uranium enrichment and related services in accordance with, and within the period of, an agreement for cooperation arranged pursuant to section 123 of title I or as otherwise authorized by law; **Provided**, that comparable services are made available pursuant to paragraph (1);

"'e. shall sell to the Department as provided in this title, and without regard to the provisions of 31 U.S.C. 1535, such amounts of uranium or uranium enrichment and related services as the Department may determine from time to time are required: (1) for the Department to carry out Presidential direction and authorizations pursuant to section 91 of title I; and (2) for the conduct of other Department programs;

"'f. may grant licenses, both exclusive and nonexclusive, for the use of patent and patent applications owned by the Corporation, and establish and collect charges, in the form of royalties or otherwise, for utilization of Corporation-owned facilities, equipment, patents, and technical information of a proprietary nature pertaining to the Corporation's activities.

"'SEC. 1402. GENERAL POWERS OF THE CORPORATION -- In order to accomplish the purposes of this title, the Corporation --

"'a. shall have perpetual succession unless dissolved by Act of Congress;

"'b. may adopt, alter, and use a corporate seal, which shall be judicially noticed;

"'c. may sue and be sued in its corporate name and be represented by its own attorneys in all judicial and administrative proceedings;

"'d. may indemnify the Administrator, officers, attorneys, agents and employees of the Corporation for liabilities and expenses incurred in connection with their corporate activities;

"'e. may adopt, amend, and repeal bylaws, rules and regulations governing the manner in which its business may be conducted and the power granted to it by law may be exercised and enjoyed;

"'f. (1) may acquire, purchase, lease, and hold real and personal property including patents and proprietary data, as it deems necessary in the transaction of its business, and sell, lease, grant, and dispose of such real and personal property, as it deems necessary to effectuate the purposes of this title and without regard to the Federal Property and the Administrative Services Act of 1949, as amended;

"'(2) Purchases, contracts for the construction, maintenance, or management and operation of facilities and contracts for supplies or services, except personal services, made by the Corporation shall be made after advertising, in such manner and at such times sufficiently in advance of opening bids, as the Corporation shall determine to be adequate to insure notice and an opportunity for competition; **Provided**, that advertising shall not be required when the Corporation determines that the making of any such purchase or contract without advertising is necessary in the interest of furthering the purposes of this title, or that advertising is not reasonably practicable;

"'g. with the consent of the agency or government concerned, may utilize or employ the services or personnel of any Federal Government agency, or any State or local government, or voluntary or uncompensated personnel to perform such functions on its behalf as may appear desirable;

"'h. may enter into and perform such contracts, leases, cooperative agreements, or other transactions as may be necessary in the conduct of its business and on such terms as it may deem appropriate, with any agency or instrumentality of the United States, or with any State, territory or possession, or with any political subdivision thereof, or with any person, firm, association, or corporation;

"'i. may determine the character of and the necessity for its obligations and expenditures and the manner in which they shall be incurred, allowed, and paid, subject to the provisions of this title and other provisions of law specifically applicable to wholly-owned Government corporations;

"'j. notwithstanding any other provision of law, and without need for further appropriation, may use monies, unexpended appropriations, revenues and receipts from operations, amounts received from obligations issued and other assets of the Corporation in accordance with section 1505, without fiscal year limitation, for the payment of expenses and other obligations incurred by the Corporation in carrying out its functions under, and within the requirements of, this title; and shall not be subject to apportionment under the provisions of subchapter II of chapter 15 of title 31, United States Code.

"'k. may settle and adjust claims held by the Corporation against other persons or parties and claims by other persons or parties against the Corporation;

"'l. may exercise, in the name of the United States, the power of eminent domain for the furtherance of the official purposes of the Corporation;

"'m. shall have the priority of the United States with respect to the payment of debts out of bankrupt, insolvent, and decedents' estates;

"'n. may define appropriate information as ''Government Commercial Information'' and exempt such information from mandatory release pursuant to 5 U.S.C. 552(b)(3) when it is determined by the Administrator that such information if publicly released would harm the Corporation's legitimate commercial interests;

"'o. may request, and the Administrator of General Services, when requested, shall furnish the Corporation such services as he is authorized to provide agencies of the United States;

"'p. may accept gifts or donations of services, or of property, real, personal, mixed, tangible or intangible, in aid of any purposes herein authorized; and

"'q. may execute, in accordance with its bylaws, rules and regulations, all instruments necessary and appropriate in the exercise of any of its powers.

"'SEC. 1403. CONTINUATION OF CONTRACTS, ORDERS, PROCEEDINGS AND REGULATIONS --

"'a. Except as provided elsewhere in this title, all contracts, agreements, and leases with the Department, and licenses, and privileges that have been afforded to the Department prior to the date of the enactment of this title and that relate to uranium enrichment, including all enrichment services contracts and power purchase contracts, shall continue in effect as if the Corporation had executed such contracts, agreements, or leases or had been afforded such licenses and privileges.

"'b. As related to the functions vested in the Corporation by this title, all orders, determinations, rules, regulations and privileges of the Department shall continue in effect and remain applicable to the Corporation until modified terminated, superseded, set aside or revoked by the Corporation, by any court of competent jurisdiction, or by operation of law unless otherwise specifically provided in this title.

"'c. Except as provided elsewhere in this title, the transfer of functions related to and vested in the Corporation by this title shall not affect proceedings judicial or otherwise, relating to such functions which are pending at the time this title takes effect, and such proceedings shall be continued with the Corporation, as appropriate.

"'SEC. 1404. CERTAIN PENDING LITIGATION --

"'The Corporation may enter into or continue any contract in accordance with the provisions of this title without regard to any judgment in the proceeding pending before the United States Court of Appeals for the Tenth Circuit in Docket No. 85-2428, concerning the procedure followed by the Department in setting the terms of certain enrichment services contracts.

"'SEC. 1405. LIABILITIES --

"'Except as provided elsewhere in this title, all liabilities attributable to operation of the uranium enrichment enterprise prior to the date of the enactment of this title shall remain direct liabilities of the Government of the United States.

"'CHAPTER 25. ORGANIZATION, FINANCE AND MANAGEMENT

"'SEC. 1501. ADMINISTRATOR --

"'a. The management of the Corporation shall be vested in an Administrator who shall be appointed by the President, by and with the advice and consent of the Senate, without regard to political affiliation. The Administrator shall be a person who, by reason of professional background and experience is specially qualified to manage the Corporation; **Provided, however,** That upon enactment of this title, the President shall appoint an existing officer or employee of the United States to act as Administrator until the office is filled.

"'b. The Administrator --

"'(1) shall be the chief executive officer of the Corporation and shall be responsible for the management and direction of the Corporation. The Administrator shall establish the offices, appoint the officers and employees of the Corporation (including attorneys), and define their responsibilities and duties. The Administrator shall appoint other officers and employees as may be required to conduct the Corporation's business;

"'(2) shall serve a term of six years but may be reappointed;

"'(3) shall, before taking office, take an oath to faithfully discharge the duties thereof;

"'(4) shall have compensation determined by the President except that compensation shall not exceed Executive Level I, as prescribed in 5 U.S.C. 5312;

"'(5) shall be a citizen of the United States;

"'(6) shall designate an officer of the Corporation who shall be vested with the authority to act in the capacity of the Administrator in the event of absence or incapacity; and

"'(7) may be removed from office only by the President and only for neglect of duty or malfeasance in office. The President shall communicate the reasons for any such removal to both Houses of Congress at least 30 days prior to the effective date of such removal.

"'c. The Administrator shall be solely responsible for the exercise of all powers and responsibilities that are committed to the Administrator under this title and, notwithstanding the provisions of 31 U.S.C. 9104(a)(4), including the setting of the appropriate amount of, and paying, any dividend under section 1506(c) and all other fiscal matters.

"'SEC. 1502. DELEGATION --

"'The Administrator may delegate to other officers or employees powers and duties assigned to the Corporation in order to achieve the purposes of this title.

"'SEC. 1503. ADVISORY BOARD --

"'There is hereby established an Advisory Board appointed by the President which shall consist of five members, one of whom shall be designated as chairman. Members of the Advisory Board shall be individuals possessing high integrity, demonstrated accomplishment and broad experience in management and shall have strong backgrounds in science, engineering, business or finance. At least one member of the Advisory Board shall be, or previously have been, employed on a full-time basis in managing an electric utility:

"'a. The specific responsibilities of the Advisory Board shall be to:

"'(1) review the Corporation's policies and performance and advise the Administrator on these matters; and

"'(2) advise the Administrator on any other such matters concerning the Corporation as may be referred to the Advisory Board.

"'b. Except for initial appointments, members of the Advisory Board shall serve five-year terms. Each member of the Advisory Board shall be a citizen of the United States. No more than three members of the Board shall be members of any one political party. Of those first appointed, the chairman shall serve for the full five-year term; one member shall serve for a term of four years; one shall serve for a term of three years; one shall serve for a term of two years; and one shall serve for a term of one year.

"'c. Upon expiration of the initial term, each Advisory Board member appointed thereafter shall serve a term of five years. Upon the occurrence of a vacancy on the Board, the President shall appoint an individual to fill such vacancy for the remainder of the applicable term. Upon expiration of a term, a Board member may continue to serve up to a maximum of one year or until a successor shall have been appointed and assumed office, whichever occurs first.

"'d. The members of the Advisory Board in executing their duties shall be governed by the laws and regulations regarding conflicts of interest, but exempted from other provisions and authority prescribed by the Federal Advisory Committee Act, as amended (5 U.S.C. Appendix 2).

"'e. The Advisory Board shall meet at any time pursuant to the call of the Chairman and as provided by the bylaws of the Corporation, but not less than quarterly.

"'f. The Corporation shall compensate members of the Advisory Board at a per diem rate equivalent to Executive Level III, as defined in 5 U.S.C. 5314, in addition to reimbursement of reasonable expenses incurred when engaged in the performance of duties vested in the Advisory Board. Any Advisory Board member who is otherwise a Federal employee shall not be eligible for compensation above reimbursement for reasonable expenses incurred while attending official meetings of the Corporation.

"'g. (1) The Advisory Board shall report at least annually to the Administrator on the performance of the Corporation and the issues that, in the opinion of the Board, require the attention of the Administrator. Any such report shall include such recommendations as the Board finds appropriate. A copy of any report under this subsection shall be transmitted promptly to the President, the Committee on Energy and Natural Resources of the Senate and to the Speaker of the House of Representatives.

"'(2) Within 90 days after the receipt of any report under this subsection the Administrator shall respond in writing to such report and provide an analysis of such recommendations of the Board contained in the report. Such response shall include plans for implementation of each recommendation or a statement of the reasons why that recommendation will not be implemented.

"'SEC. 1504. EMPLOYEES OF THE CORPORATION --

"'Officers and employees of the Corporation shall be officers and employees of the United States:

"'a. The Administrator shall appoint all officers, employees and agents of the Corporation as are deemed necessary to effect the provisions of this title without regard to any administratively imposed limits on personnel, and any such officer, employee or agent shall only be subject to the supervision of the Administrator. The Administrator shall fix all compensation in accordance with the comparable pay provisions of 5 U.S.C. 5301, with compensation levels not to exceed Executive Level II, as defined in 5 U.S.C. 5313. The Administrator shall define the duties of all officers and employees and provide a system of organization inclusive of a personnel management system to fix responsibilities and promote efficiency. The Corporation shall assure that the personnel function and organization is consistent with the principles of 5 U.S.C. 2301(b) relating to merit system principles. Officers and employees of the Corporation shall be appointed, promoted and assigned on the basis of merit and fitness, and other personnel actions shall be consistent with the principles of fairness and due process but without regard to those provisions of title 5 of the United States Code governing appointments and other personnel actions in the competitive service.

"'b. Any Federal employee hired before January 1, 1984, who transfers to the Corporation and who on the day before the date of transfer is subject to the Federal Civil Service Retirement System (subchapter III of chapter 83 of title 5, United States Code) shall remain within the coverage of such system unless he or she elects to be subject to the Federal Employees' Retirement System. For those employees remaining in the Federal Civil Service Retirement System, the Corporation shall withhold pay and shall pay into the Civil Service Retirement and Disability Fund the amounts specified in chapter 83 of title 5, United States Code. Employment by the Corporation without a break in continuity of service shall be considered to be employment by the United States Government for purposes of subchapter III of chapter 83 of title 5, United States Code. Any employee of the Corporation who is not within the coverage of the Federal Civil Service Retirement System shall be subject to the Federal Employees' Retirement System (chapter 84 of title 5, United States Code). The Corporation shall withhold pay and make such payments as are required under that retirement system. Further:

"'(1) Any employee who transfers to the Corporation under this section shall not be entitled to lump sum payments for unused annual leave under 5 U.S.C. 5551, but shall be credited by the Corporation with the unused annual leave at the time of transfer.

"'(2) An employee who does not transfer to the Corporation and who does not otherwise remain a Federal employee shall be entitled to all the rights and benefits available under Federal law for separated employees, except that severance pay shall not be payable to an employee who does not accept an offer of employment from the Corporation of work substantially similar to that performed by the employee for the Department.

"'c. This section does not affect a right or remedy of an officer, employee, or applicant for employment under a law prohibiting discrimination in employment in the Government on the basis of race, color, religion, age, sex, national origin, political affiliation, marital status, or handicap conditions.

"'d. Officers and employees of the Corporation shall be covered by chapter 73 of title 5 United States Code, relating to suitability, security and conduct.

"'e. Compensation, benefits, and other terms and conditions of employment in effect immediately prior to the effective date of this section, whether provided by statute or by rules and regulations of the Department or the executive branch of the Government of the United States shall continue to apply to officers and employees who transfer to the Corporation from other Federal employment until changed by the Corporation or Congress in accordance with the provisions of this title.

"'f. The provisions of sections 3323(a) and 8344 of title 5, United States Code, or any other law prohibiting or limiting the reemployment of retired officers or employees or the simultaneous receipt of compensation and retired pay or annuities, shall not apply to officers and employees of the Corporation who have retired from or ceased previous government service prior to April

28, 1987.

"'SEC. 1505. TRANSFER OF PROPERTY TO THE CORPORATION --

"'In order to enable the Corporation to exercise the powers and duties vested in it by this title:

"'a. The Secretary, in consultation with the Administrator, is authorized and directed to transfer without charge to the Corporation all of the Department's right, title, or interest in and to, real or personal properties owned by the Department, or by the United States but under control or custody of the Department, which are related to and materially useful in the performance of the functions transferred by this title, including but not limited to the following:

"'(1) production facilities for uranium enrichment inclusive of real estate, buildings and other improvements at production sites and their related and supporting equipment; Provided, that facilities, real estate, improvements and equipment related to the Oak Ridge K-25 plant in Oak Ridge, Tennessee, and to the gas centrifuge enrichment program located shall not transfer under this subsection. This paragraph shall not prejudice consideration of any site as a candidate site for future expansion or replacement of uranium enrichment capacity.

"'(2) facilities, equipment, and materials for research and development activities related to the isotopic separation of uranium by the gaseous diffusion technology.

"'(3) The Department's stocks of preproduced enriched uranium.

"'(4) the portion of the Department's stocks of feed materials needed for a minimum working inventory of 18,000 metric tons of uranium (MTU).

"'(A) The Department's stockpile of enrichment tails, as of the date of enactment, shall remain with the Department.

"'(B) Stocks of feed materials which remain the property of the Department under paragraph (4) shall remain in place at the enrichment plant sites. The Corporation shall have access to and use of these feed materials provided such quantities as are used are replaced, or credit given, if use by the Department is subsequently needed.

"'(5) all other facilities, equipment, materials, processes, patents, technical information of any kind, contracts, agreements, and leases to the extent these items concern the Corporation's functions and activities, except those items required for programs and activities of the Department and those items specifically excluded by this subsection.

"'b. The Secretary is authorized and directed to grant to the Corporation without charge the Department's rights and access to the Atomic Vapor Laser Isotope Separation, hereinafter referred to as 'AVLIS', technology and to provide on a reimbursable basis and at the request of the Corporation, the necessary cooperation and support of the Department to assure the commercial development and deployment of AVLIS or other technologies in a manner consistent with the intent of this title.

"'c. The Secretary is authorized and directed to grant the Corporation without charge, to the extent necessary or appropriate for the conduct of the Corporation's activities, licenses to practice or have practiced any inventions or discoveries (whether patented or unpatented) together with the right to use or have used any processes and technical information owned or controlled by the Department.

"'d. The Secretary is directed, without need of further appropriation, to transfer to the Corporation the unexpended balance of appropriations and other monies available to the Department (inclusive of funds set aside for accounts payable), and accounts receivable which are related to functions and activities acquired by the Corporation from the Department pursuant to this title, including all advance payments.

"'e. The President is authorized to provide for the transfer to the Corporation of the use, possession, and control of such other real and personal property of the United States which is reasonably related to the functions performed by the Corporation. Such transfers may be made by the President without charge as he may from time to time deem necessary and proper for achieving the purposes of this title.

"'SEC. 1506. CAPITAL STRUCTURE OF THE CORPORATION --

"'a. Upon commencement of operations of the Corporation, all liabilities then chargeable to unexpended balances of appropriations transferred under section 1505 shall become liabilities of the Corporation.

"'b. (1) The Corporation shall issue capital stock representing an equity investment equal to the book value of assets transferred to the Corporation, as reported in the Uranium Enrichment Annual Report for fiscal year 1987, modified to reflect continued depreciation and other usual changes that occur up to the date of transfer. The Secretary of the Treasury shall hold such stock for the United States; **Provided**, that all rights and duties pertaining to management of the Corporation shall remain vested in the Administrator as specified in section 1501.

"'(2) The capital stock of the Corporation shall not be sold, transferred, or conveyed by the United States unless such disposition is specifically authorized by Federal law enacted after enactment of this title.

"'c. The Corporation shall pay into miscellaneous receipts of the Treasury of the United States or such other fund as provided by law, dividends on the capital stock, out of earnings of the Corporation, as a return on the investment represented by such stock. The Corporation shall pay such dividends out of earnings, unless there is an overriding need to retain these funds in furtherance of other corporate functions including but not limited to research and development, capital investments and establishment of cash reserves.

"'d. The Corporation shall repay within a 20-year period the amount of $364,000,000 into miscellaneous receipts of the Treasury of the United States, or such other fund as provided by law with interest on the unpaid balance from the date of enactment of this title at a rate equal to the average yield on 20-year Government obligations as determined by the Secretary of the Treasury on the date of enactment of this title. The money required to be repaid under this subsection is hereinafter referred to as the 'Initial Debt'.

"'e. Receipt by the United States of the stock issued by the Corporation (including all rights appurtenant thereto) together with repayment of the Initial Debt shall constitute the sole recovery by the United States of previously unrecovered costs that have been incurred by the United States for uranium enrichment activities prior to enactment of this title.

"'SEC. 1507. BORROWING --

"'a. (1) The Corporation is authorized to issue and sell bonds, notes, and other evidences of indebtedness (hereinafter collectively referred to as 'bonds') in an amount not exceeding $2,500,000,000 outstanding at any one time to assist in financing its activities and to refund such bonds. The principal of and interest on said bonds shall be payable from revenues of the Corporation.

"'(2) Notwithstanding any other provision of law, the Corporation may pledge and use its revenues for payment of the principal of and interest on said bonds, for purchase or redemption thereof, and for other purposes incidental thereto, including creation of reserve funds and other funds which may be similarly pledged and used, to such extent and in such manner as it may deem necessary or desirable.

"'(3) Notwithstanding any other provision of law, the Corporation is authorized to enter into binding covenants with the holders of said bonds--and with the trustee, if any--under any indenture, resolution, or other agreement entered into in connection with the issuance thereof with respect to the establishment of reserve funds and other funds, stipulations concerning the subsequent issuance of bonds, and such other matters, not inconsistent with this title, as the Corporation may deem necessary or desirable to enhance the marketability of said bonds.

"'(4) Bonds issued by the Corporation hereunder shall not be obligations of, nor shall payments of the principal thereof or interest thereon be guaranteed by, the United States.

"'b. Bonds issued by the Corporation under this section shall be negotiable instruments unless otherwise specified therein, shall be in such forms and denominations, shall be sold at such times and in such amounts, shall mature at such time or times not more than thirty years from their respective dates, shall be sold at such prices, shall bear such rates of interest, may be redeemable before maturity at the option of the Corporation in such manner and at such times and redemption premiums, may be entitled to such priorities of claim on the Corporation's revenues with respect to principal and interest payments, and shall be subject to such other terms and conditions, as the Corporation may determine; **Provided,** that at least fifteen days before selling each issue of bonds hereunder (exclusive of any commitment shorter than one year) the Corporation shall advise the Secretary of the Treasury as to the amount, proposed date of sale, maturities, terms and conditions and expected rates of interest of the proposed issue in the fullest detail possible. The Corporation shall not be subject to the provisions of section 9108 of title 31, United States Code. The Corporation shall be deemed part of an executive department or an independent establishment of the United States for purposes of the provisions of 15 U.S.C. 78c(c).

"'c. Bonds issued by the Corporation hereunder shall be lawful investments and may be accepted as security for all fiduciary, trust, and public funds, the investment or deposit of which shall be under the authority or control of any officer or agency of the United States. The Secretary of the Treasury or any other officer or agency having authority over or control of any such fiduciary, trust, or public funds, may at any time sell any of the bonds of the Corporation acquired by them under this section; **Provided,** that the Corporation shall not issue or sell any bonds to the Federal Financing Bank.

"'SEC. 1508. PRICING --

"'a. To the extent permitted by prevailing business conditions, the Corporation shall establish prices and charges for its products, materials and services that in the opinion of the Corporation will over the long term: (1) recover the costs of performing and maintaining corporate functions, including but not limited to research and development, depreciation of assets, decontamination and decommissioning, and repayment of the Initial Debt and other obligations of the Corporation; and (2) generate profits consistent with the maintenance of the Corporation as a continuing, commercial enterprise and other purposes of this title; **Provided,** That the Corporation in setting prices and charges for products, materials and services provided to the Department shall recover on a yearly basis its costs of providing such products, materials or services, without regard to prevailing business conditions and without generation of profit. Prices and other contractual terms for the provision of products, materials, or services by the Corporation shall be established without regard to the provisions of the Administrative Procedure Act, as amended.

"'b. (1) In accordance with the cost responsibilities defined in paragraphs (3) and (4), the Corporation shall recover from its current customers in the prices and charges established in accordance with subsection (a), amounts that will be sufficient to pay for the costs of decommissioning and decontamination of the various property of the Corporation, including property transferred under section 1505(a). Such costs shall be based on the point in time that such decommissioning and decontamination is to be undertaken and accomplished.

"'(2) In order to meet the objective defined in paragraph

(1), the Corporation shall periodically estimate the anticipated or actual costs of decommissioning and decontamination. Such estimates shall reflect any changes in assumptions or expectations relevant to meeting such objective, including, but not limited to, any changes in applicable environmental requirements. Such estimates shall be reviewed at least every two years.

"'(3) With respect to property that has been used in the production of low-assay separative work,

"'(A) The cost of decommissioning and decontamination that shall be recoverable from commercial customers in prices and charges shall be in the same ratio to the total costs of decommissioning and decontaminating the property in question as the production of separative work over the life of such property for commercial customers bears to the total production of separative work over the life of such property.

"'(B) All other costs of decommissioning and decontaminating such property shall be recovered in prices and charges to the Department.

"'(4) With respect to property that has been used solely in the production of high-assay separative work, all costs of decommissioning and decontaminating of such property shall be recovered in prices and charges to the Department.

"'SEC. 1509. AUDITS -- In fiscal years during which an audit is not performed by the Comptroller General in accordance with the provisions of 31 U.S.C. 9105, the financial transactions of the

Corporation shall be audited by an independent firm or firms of nationally recognized certified public accountants who shall prepare such audits using standards appropriate for commercial corporate transactions. The fiscal year of the Corporation shall conform to the fiscal year of the United States. The General Accounting Office shall review such audits annually, and to the extent necessary, cause there to be a further examination of the Corporation using standards for commercial corporate transactions. Such audits shall be conducted at the place or places where the accounts of the Corporation are established and maintained. All books, financial records, reports, files, papers, memoranda, and other property of, or in use by, the Corporation shall be made available to the person or persons authorized to conduct audits in accordance with the provisions of this section.

"'SEC. 1510. REPORTS --

"'a. The Corporation shall prepare an annual report of its activities. This report shall contain:

"'(1) A general description of the Corporation's operations;

"'(2) A summary of the Corporation's operating and financial performance, including an explanation of the decision to pay or not pay dividends; and

"'(3) Copies of audit reports prepared in conformance with section 1509 of this title and the provisions of the Government Corporation Control Act, as amended.

"'b. A copy of the annual report shall be provided to the President, the Committee on Energy and Natural Resources of the Senate, and the appropriate committees of the House of Representatives. Such reports shall be completed not later than 90 days following the close of each fiscal year and shall accurately reflect the financial position of the Corporation at fiscal year end, inclusive of any impairment of capital or ability of the Corporation to comply with the provisions of this title.

"'SEC. 1511. CONTROL OF INFORMATION --

"'a. The term ''Commission'' shall be deemed to include the Corporation wherever such terms appears in section 141 and subsections a. and b. of section 142 of title I.

"'b. No contracts or arrangements shall be made, nor any contract continued in effect, under Section 1401, 1402, 1403, or 1404, unless the person with whom such contract or arrangement is made, or the contractor or prospective contractor, agrees in writing not to permit any individual to have access to Restricted Data, as defined in section 11 y. of title I, until the Office of Personnel Management shall have made an investigation and report to the Corporation on the character, associations, and loyalty of such individual, and the Corporation shall have determined that permitting such person to have access to Restricted Data will not endanger the common defense and security.

"'c. The restrictions detailed in subsections b., c., d., e., f., g., and h., of section 145 of title I shall be deemed to apply to the Corporation where they refer to the Commission or a majority of the members of the Commission, and to the Administrator where they refer to the General Manager.

"'d. The Administrator shall keep the appropriate congressional committees fully and currently informed with respect to all of the Corporation's activities. To the extent consistent with the other provisions of this section, the Corporation shall make available to any of such committees all books, financial records, reports, files, papers, memoranda, or other information possessed by the Corporation upon receiving a request for such information from the chairman of such committee.

"'e. Whenever the Corporation submits to the President, or the Office of Management and Budget, any budget, legislative recommendation, testimony, or comments on legislation, prepared for submission to the Congress, the Corporation shall concurrently transmit a copy thereof to the appropriate committees of Congress.

"'f. The Corporation shall have no power to control or restrict the dissemination of information other than as granted by this or any other law.

"'SEC. 1512. PATENTS AND INVENTIONS --

"'a. The term ''Commission'' shall be deemed to include the Corporation wherever such term appears in section 152, 153 b. (1), and 158 of title I. The Corporation shall pay such royalty fees for patents licensed to it under section 153 b. (1) of title I as are paid by the Department under that provision. Nothing in title I or this title shall affect the right of the Corporation to require that patents granted on inventions, that have been conceived or first reduced to practice during the course of research or operations of, or financed by the Corporation, be assigned to the Corporation.

"'b. The Department shall notify the Corporation of all reports heretofore or hereafter filed with it under subsection 151 c. of title I and all applications for patents heretofore or hereafter filed with the Commissioner of Patents of which the Department has notice under subsection 151 d. of title I or otherwise, whenever such reports or applications involve matters pertaining to the functions or responsibilities of the Corporation in accordance with this title. The Department shall make all such reports available to the Corporation, and the Commissioner of Patents shall provide the Corporation access to all such applications. All reports and applications to which access is so provided shall be kept in confidence by the Corporation, and no information concerning the same given without authority of the inventor or owner unless necessary to carry out the provisions of any Act of Congress.

"'c. The Corporation, without regard for any of the conditions specified in paragraph 153 c. (1), (2), (3), or (4) of title I, may at any time make application to the Department for a patent license for the use of an invention or discovery useful in the production or utilization of special nuclear material or atomic energy covered by a patent when such patent has not been declared to be affected with the public interest under subsection 153 b. (1) of title I and when use of such patent is within the Corporation's authority. Any such application shall constitute an application under subsection 153 c. of title I subject, except as specified above, to all the provisions of subsections 153 c., d., e., f., g., and h., of title I.

"'d. With respect to the Corporation's functions under this title, section 158 of title I shall be deemed to include the Corporation within the phrase, ''any other licensee'' in the first sentence thereof and within the phrase ''such licensee'' in the second sentence thereof.

"'e. The Corporation shall not be liable directly or indirectly for any damages or financial responsibility with respect to secrecy orders imposed under 35 U.S.C. 181 through 187.

"'f. The Corporation shall not be liable or responsible for any payments made or awards under subsection 157 b.(3) of title I, or any settlements or judgments involving claims for alleged patent infringement except to the extent that any such awards, settlements or judgments are attributable to activities of the Corporation after the effective date of this title.

"'g. The Corporation shall keep currently informed as to matters affecting its rights and responsibilities under chapter 13 of title I as modified by this section and shall take all appropriate action to avail itself of such rights and satisfy such responsibilities. The Department in discharging its responsibilities under chapter 13 of title I shall exercise diligence in informing the Corporation of matters affecting the responsibilities and jurisdiction of the Corporation and seeking and following as appropriate the advice and recommendation of the Corporation in such matters.

"'CHAPTER 26. LICENSING, TAXATION, AND MISCELLANEOUS PROVISIONS

"'SEC. 1601. LICENSING--

"'a. Notwithstanding any other provision of law, with respect solely to facilities, equipment and materials for activities related to the isotopic separation of uranium by the gaseous diffusion technology at facilities in existence as of the date of enactment of this title, the Corporation and its contractors are hereby exempted from the licensing requirements and prohibitions of sections 57, 62, 81 and other provisions of title I, to the same extent as the Department and its contractors are exempt in regard to the Department's own functions and activities. Such exemption shall remain in effect unless and until the Corporation and its contractors receive all necessary licenses for such facilities, equipment and materials as are required under title I.

"'b. Within four years of the enactment of this title, the Commission shall promulgate regulations under title I for the licensing of facilities described in subsection (a) that employ the gaseous diffusion technology. The Commission shall not consider the need for such facilities, alternatives to such facilities, or the costs compared to the benefits of such facilities.

"'c. As soon as practicable after the promulgation of regulations under subsection (b), the Corporation and its contractors shall make necessary applications for and otherwise seek to obtain such licenses as will remove the exemption provided under subsection (a).

"'d. The Corporation shall not transfer or deliver any source, special nuclear or by-product materials or production or utilization facilities, as defined in Title I, to any person who is not properly qualified or licensed under the provisions of Title I.

"'e. The Corporation shall be subject to the regulatory jurisdiction of the Commission and the Department of Transportation with respect to the packaging and transportation of source, special nuclear and by-product materials.

"'SEC. 1602. EXEMPTION FROM TAXATION AND PAYMENTS IN LIEU OF TAXES --

"'a. In order to render financial assistance to those states and localities in which the facilities of the Corporation are located, the Corporation is authorized and directed to make payments to state and local governments as provided in this section. Such payments shall be in lieu of any and all state and local taxes on the real and personal property, activities and income of the Corporation. All property of the Corporation its activities, and income are expressly exempted from taxation in any manner or form by any state, county, or other local government entity. The activities of the Corporation for this purpose shall include the activities of organizations pursuant to cost-type contracts with the Corporation to manage, operate and maintain its facilities. The income of the Corporation shall include income received by such organizations for the account of the Corporation. The income of the Corporation shall not include income received by such organizations for their own accounts, and such income shall not be exempt from taxation.

"'b. The Corporation shall make annual payments, in amounts determined by the Corporation to be fair and reasonable, to the state and local governmental agencies having tax jurisdiction in any area where facilities of the Corporation are located. In making such determinations, the Corporation shall be guided by the following criteria:

"'(1) Amounts paid shall not exceed the tax payments that would be made by a private industrial corporation owning similar facilities and engaged in similar activities at the same location; **Provided, however,** That there shall be excluded any amount that would be payable as a tax on net income.

"'(2) The Corporation shall take into account the customs and practices prevailing in the area with respect to appraisal, assessment, and classification of industrial property and any special considerations extended to large-scale industrial operations.

"'(3) No amount shall be included to the extent that any tax unfairly discriminates against the class of taxpayers of which the Corporation would be a member if it were a private industrial corporation, compared with other taxpayers or classes of taxpayers.

"'(4) In no event shall the payment made to any taxing authority for any period be less than the payments which would have been made to such taxing authority for the same period by the Department and its cost-type contractors on behalf of the Department with respect to property that has been transferred to the Corporation under section 1505 and which would have been attributable to the ownership, management operation, and maintenance of the Department's uranium enrichment facilities, applying the laws and policies prevailing immediately to the enactment of this title.

"'c. Payments shall be made by the Corporation at the time when payments of taxes by taxpayers to each taxing authority are due and payable; Provided, that no payment shall be made to the extent that the tax would apply to a period prior to the enactment of this title.

"'d. The determination by the Corporation of the amounts due hereunder shall be final and conclusive.

"'SEC. 1603. MISCELLANEOUS APPLICABILITY OF TITLE I --

"'a. Any references to the term ''Commission'' or to the Department in sections 105 b., 110 a., 161 c., 161 k., 161 q., 165 a., 221 a., 229, 230 and 232 of title I shall be deemed to include the Corporation.

"'b. Section 188 of title I shall apply to licensed facilities of the Corporation. For purposes of applying such section to facilities of the Corporation:

"'(1) The term ''Commission'' shall be deemed to refer to the Secretary;

"'(2) There shall be no requirement for payment of just compensation to the Corporation, and receipts from operation of the facility in question shall continue to accrue to the benefit of the Corporation; and

"'(3) The Secretary shall have the discretion to determine how and by whom the facility in question will be operated.

"'SEC. 1604. COOPERATION WITH OTHER AGENCIES --

"'The Corporation is empowered to use with their consent the available services, equipment, personnel, and facilities of other civilian or military agencies and instrumentalities of the Federal Government, on a reimbursable basis and on a similar basis to cooperate with such other agencies and instrumentalities in the establishment and use of services, equipment, and facilities of the Corporation. Further, the Corporation may confer with and avail itself of the cooperation, services, records, and facilities of state, territorial, municipal or other local agencies.

"'SEC. 1605. APPLICABILITY OF ANTITRUST LAWS --

"'a. The Corporation shall conduct its activities in a manner consistent with the policies expressed in the antitrust laws, except as required by the public interest.

"'b. As used in this subsection, the term ''antitrust laws'' means:

"'(1) The Act entitled: ''An Act to protect trade and commerce against unlawful restraints and monopolies,'' approved July 2, 1890 (15 U.S.C. 1-7), as amended;

"'(2) The Act entitled, ''An Act to supplement existing laws against unlawful restraints and monopolies, and for other purposes,'' approved October 15, 1914 (15 U.S.C. 12-27), as amended;

"'(3) Sections 73 and 74 of the Act entitled, ''An Act to reduce taxation, to provide revenue for the Government, and for other purposes,'' approved August 27 1894 (15 U.S.C. 8 and 9), as amended; and

"'(4) The Act of June 19 1936, chapter 592 (15 U.S.C. 13, 13a, 13b, and 21a).

"'SEC. 1606. NUCLEAR HAZARD INDEMNIFICATION--

"'The Administrator shall have the same authority to indemnify the contractors of the Corporation as the Secretary has to indemnify contractors under section 170 d. of title I.

"'SEC. 1607. INTENT --

"'It is hereby declared to be the intent of this title to aid the Corporation in discharging its responsibilities under this title by providing it with adequate authority and administrative flexibility to obtain necessary funds with which to assure the maximum achievement of the purposes hereof as provided herein, and this title shall be construed liberally to effectuate such intent.

"'SEC. 1608. REPORT --

"'a. Five years after enactment of this title, the Administrator shall submit to the President and to Congress a report setting forth the views and recommendations of the Administrator regarding transfer of the functions, powers, duties, and assets of the Corporation to private ownership. If the Administrator recommends such transfers, the report shall include a plan for implementation of the transfers.

"'b. Within 180 days after receipt of the report under subsection (a), the President shall transmit to Congress his recommendations regarding the report, including a plan for implementation of any transfers recommended by the President and any recommendations for legislation necessary to effectuate such transfers.

"'CHAPTER 27. DECONTAMINATION AND DECOMMISSIONING

"'SEC. 1701. ESTABLISHMENT --

"'a. ESTABLISHMENT OF FUND

"'(1) There is hereby established in the Treasury of the United States an account of the Corporation to be known as the Uranium Enrichment Decontamination and Decommissioning Fund (hereinafter referred to in this chapter as the ''Fund''). In accordance with section 1402(j), such account and any funds deposited therein, shall be available to the Corporation for the exclusive purpose of carrying out the purposes of this chapter.

"'(2) The Fund shall consist of:

"'(A) Amounts paid into it by the Corporation in accordance with section 1702; and

"'(B) Any interest earned under subsection (b)(2).

"'b. ADMINISTRATION OF FUND

"'(1) The Secretary of the Treasury shall hold the Fund and, after consultation with the Corporation, annually report to the Congress on the financial condition and operations of the Fund during the preceding fiscal year.

"'(2) At the direction of the Corporation, the Secretary of the Treasury shall invest amounts contained within such Fund in obligations of the United States:

"'(A) Having maturities determined by the Secretary of the Treasury to be appropriate to the needs of the Fund, as determined by the Corporation; and

"'(B) Bearing interest at rates determined to be appropriate by the Secretary of the Treasury, taking into consideration the current average market yield on outstanding marketable obligations of the United States with remaining periods to maturity comparable to such obligations.

"'(3) At the request of the Corporation, the Secretary of the Treasury shall sell such obligations and credit the proceeds to the Fund.

"'SEC. 1702. DEPOSITS --

"'Within 60 days of the end of each fiscal year, the Corporation shall make a payment into the Fund in an amount equal to the costs of decontamination and decommissioning that have been recovered during such fiscal year by the Corporation in its prices and charges established in accordance with section 1508 for products, materials, and services.

"'SEC. 1703. PERFORMANCE AND DISBURSEMENTS --

"'a. When the Corporation determines that particular property should be decommissioned or decontaminated, or both, it shall enter into a contract for the performance of such decommissioning and decontamination.

"'b. The Corporation shall pay for the costs of such decommissioning and decontamination out of amounts contained within the Fund.'.

"SEC. 113. TREATMENT OF THE CORPORATION AS BEING PRIVATELY-OWNED FOR PURPOSES OF THE APPLICABILITY OF ENVIRONMENTAL AND OCCUPATIONAL SAFETY LAWS -- The United States Enrichment Corporation shall be subject to Federal environmental laws and the Occupational Safety and Health Act (29 U.S.C. 651-678) to the same extent as is the Department of Energy as of the date of enactment. After four years from the date of enactment of this title, the United States Enrichment Corporation shall become subject to such laws to the same extent as a privately-owned corporation, unless the President determines that additional time is necessary to achieve the purposes of title II of the Atomic Energy Act of 1954, as amended.

"SEC. 114. MISCELLANEOUS PROVISIONS. --(a) Section 9101(3) of title 31, United States Code (relating to the definition of 'wholly-owned Government corporation') is amended by adding at the end of the following: '(N) United States Enrichment Corporation.'.

"(b) In subsection 41 a. of the Atomic Energy Act of 1954, as amended, the word 'or' appearing before the numeral '(2)' is deleted, a semicolon is substituted for a period at the end of the subsection and the following new paragraph is added: 'or (3) are owned by the United States Enrichment Corporation.'.

"(c) In subsection 53 c. (1) of the Atomic Energy Act of 1954, as amended, the word 'or' is inserted before the word 'grant' and the phrase 'or through the provision of production or enrichment services' is deleted in both places where it appears in such subsection.

"(d) The Atomic Energy Act of 1954, as amended, is further amended:

"(1) By adding before the period at the end of the definition of the term 'production facility' in section 11 v. a colon and the following: '**Provided,** however, that as the term is used in Chapters 10 and 16 of this Act, other than with respect to export of a uranium enrichment production facility, it shall not include any equipment or device, or important component part especially designed therefor, capable of separating the isotopes of uranium or enriching uranium in the isotope 235';

"(2) By striking the period at the end of section 161 b. and adding the following: '; in addition, the Commission shall prescribe such regulations or orders as may be necessary or desirable to promote the Nation's common defense and security with regard to control, ownership or possession of any equipment or device, or important component part especially designed therefor, capable of separating the isotopes of uranium or enriching uranium in the isotope 235;';

"(3) By striking the phrase 'section 103 or 104' in section 41 a. (2) and inserting in lieu thereof 'this title'; and

"(4) In section 236 by striking the word 'or' following paragraph (2) and adding after paragraph (3) 'or (4) any uranium enrichment facility licensed by the Commission;'.

"(e) Subsection 905(g)(1) of Title II, United States Code, is amended to include 'United States Enrichment Corporation' at the end thereof.

"(f) Section 306 of title III of the Energy and Water Development Appropriations Act, 1988, P.L. 100-202, is repealed.

"SEC. 115. LIMITATION ON EXPENDITURES--For fiscal year 1990, total expenditures of the United States Enrichment Corporation shall not exceed total receipts.

"SEC. 116. SEVERABILITY --If any provision of this act, or the application of any provision to any entity, person or circumstance, shall for any reason be adjudged by a court of component jurisdiction to be invalid, the remainder of this act, or the application of the same shall not be thereby affected.

"SEC. 117. EFFECTIVE DATE -- Except as otherwise provided, all provisions of this act shall take effect on the day following the end of the first full fiscal year quarter following the enactment of this act; Provided, however, that the Administrator or Acting Administrator of the United States Enrichment Corporation may immediately exercise the management responsibilities and powers of subsection 1501 (a) of the Atomic Energy Act of 1954, as amended by this Act and previous Acts.".

Senator **Ford**. I am very pleased with the structure of the hearing and those who will participate today. There is only one problem that I might have and that is that the FSLIC legislation is up. They are attempting to try to finish it this afternoon. The prospects are not as bright as they were early this morning, but I may have to stop a few moments to run to vote and come back.

We are very pleased that the administration and the Department of Energy have sent the new individual on the block, if I can use that term, but a fellow who is learning fast and coming on good as far as I'm concerned, and that is the new Deputy Secretary, the Honorable W. Henson Moore. Henson, if you would come to the table, we would be glad to hear your testimony.

And before you do, I have an extraordinarily fine statement from the Chairman of our full committee, Senator Johnston, that I will place in the record at this point.

[The prepared statement of Senator Johnston follows:]

STATEMENT OF SENATOR J. BENNETT JOHNSTON
HEARING ON URANIUM ENRICHMENT LEGISLATION
April 19 and 20, 1989

I am pleased that Senator Ford's Subcommittee is holding this hearing today on the restructuring of the Federal uranium enrichment program. The Department of Energy's uranium enrichment program needs to be placed on a solid business foundation, and a government corporation is the way to accomplish this.

The enrichment program is a vital link in the production of one-fifth of this nation's electricity. It is also the provider of thousands of jobs, contributes substantially to reducing our trade deficit, and supplies fuel for more than 40% of our Navy fleet. In short, it is too important to let go down the tubes.

Senator Ford and I have co-sponsored legislation to create a wholly-owned Government corporation to manage the Department of Energy's uranium enrichment enterprise. The Administration is also planning to send legislation to the Congress which restructures the enrichment program as a government corporation. This structure is appropriate to maximize the value of the enterprise to the taxpayer. Any attempt to convert the value of the enterprise into an artificial debt runs counter to the goal of insuring the long-term health of the federal uranium enrichment enterprise. The Administration is in agreement with us on this point.

There is agreement that we need to restore the long-term strength of the enrichment program. Restructuring the enterprise will allow the enterprise to be a strong business that will make money for the taxpayer. We must work together towards this goal.

Senator **Ford**. Mr. Secretary, you may proceed.

STATEMENT OF W. HENSON MOORE, DEPUTY SECRETARY OF ENERGY, DEPARTMENT OF ENERGY

Mr. **Moore**. Thank you, Mr. Chairman. It is a pleasure to be here today to discuss the Department of Energy's uranium enrichment program, something near and dear to your heart on which you provided leadership in the Congress on for a number of years.

With sales of approximately $1.5 billion annually, the U.S. uranium enrichment enterprise is the leading supplier of uranium enrichment services in the world today.

Since the 1970s when the U.S. was the world's only supplier of enriched uranium, the world market for uranium enrichment services has become highly competitive.

The problem, as you are aware and have just stated, is that our own program is not structured as a business enterprise. Over the last several years, we have had some successes in improving our competitiveness and retaining our leadership position. But until we gain the freedom and flexibility to operate as our competitors do, the future of the enterprise will remain uncertain.

Successive administrations and Congresses have reaffirmed that the uranium enrichment enterprise is vital to the national and energy security of the United States. It is an important part of our national energy policy. The uranium enriched at our facilities fuels nuclear plants that generate 20 percent of the Nation's electricity and are free of emissions that might contribute to acid rain and global warming. These plants produce electricity on a basis that is equivalent to the avoidance of 10 million tons of SO_2 in the atmosphere each year.

They also displace the equivalent of 2.2 million barrels of oil per day, reducing the Nation's reliance on insecure sources of imported oil and our exposure to foreign supply cutoffs and price fluctuations. Enriched uranium fuels 40 percent of the Navy's principal combat ships. Foreign sales of U.S. enrichment services annually reduce the trade deficit by $500 million per year.

In addition, involvement in the international nuclear fuel cycle strengthens the U.S. voice in nonproliferation issues. The question then is not whether this important business activity should be sustained, but rather how it should be managed to best serve the Nation.

We now have a Government operation saddled with antiquated accounting requirements and subject to the constraints of the Federal budget process. If forced by non-commercial considerations to price its enrichment services higher than the market will bear, it will be unable to compete for the nearly $5 billion in sales at stake during the 1990s. It could lose all of its customers except the U.S. Government which then would have to shoulder the cost of the enterprise alone. Taxpayers would then have to support the entire cost of operation and infrastructure, pay a higher price for defense enrichment services, pick up the entire tab for environmental restoration and for decontamination and decommissioning of the retired facilities, and still have to purchase enriched uranium for one-fifth of the country's electric power needs from foreign sources.

On the other hand, a corporation that is structurally sound and endowed with the flexibility to succeed in the marketplace can immediately take advantage of the existing enterprise's position of leadership. It would be able to institute management, financial and operational efficiencies to keep its prices competitive. Potentially capable of generating a large positive cash flow by the end of the century, it would pay its own way, including the eventual cleanup of existing facilities. The taxpayer will pay less for defense needs, use domestically produced enriched uranium for electric power and see the balance of trade deficit reduced through the export of enrichment services.

A Government corporation with stock held by the Treasury not only would be more flexible than a conventional government agency with respect to marketing, contracting, management and administration, but could begin the process of establishing and sustaining a stable, commercially attractive business. Operation as a Government corporation would provide time to prepare for the possible transition to the private sector by addressing such issues as Nuclear Regulatory Commission licensing. In the future, stock or assets could be sold to one or more purchasers with a view toward creating a privately owned domestic enrichment industry.

We believe that the best way to maximize the return on investment to the taxpayers is through the establishment of a Government corporation and the payment of dividends to the Treasury. In the future, through the potential sale of the stock or assets of the corporation, an even higher return could be achieved.

A corporation would have more flexibility to make sound business decisions based on cost-benefit analyses in the area of technology development than the present structure. Atomic Vapor Laser Isotope Separation, the world's most advanced enrichment technology, has the potential to enrich uranium at about half the cost of the current gaseous diffusion process. The corporation would be better able to address the costs and benefits of this technology and then make a deployment decision.

Improvements can be made to the long-term competitiveness of the uranium enrichment enterprise in the absence of restructuring legislation, but it is my strong belief that they would be temporary in nature and not address the fundamental need for commercial flexibility. DOE has steadily improved its operations since 1984, yet substantial problems remain ahead and I believe we have nearly exhausted the remedies available under existing organizational constraints. While we pursue efficiency and competitiveness along a relatively limited number of paths, our foreign competitors can employ a much wider range of options.

By restructuring the uranium enrichment enterprise, the administration expects to help achieve the following goals: first, preservation of a strategically important domestic industry to our national energy policy; second, recovery of the government's investment as early as the market permits; and third, ultimate transfer of responsibility for enrichment activities to the private sector in an orderly manner and with a high degree of confidence for financial success.

As you in particular are aware, Mr. Chairman, the administration has submitted a legislative proposal to Congress to establish a wholly-owned Government corporation to assume the responsibilities of the Department's enrichment program and achieve the above goals.

The specific provisions that will enable the new organization to achieve these goals include: specifying a clear, guiding mission; establishing a corporation with experienced and highly qualified personnel at all levels; allowing the enterprise to make realistic business judgments based on cost-benefit analysis and conduct its operations without the operational and budgetary limits presently imposed; allowing the enterprise to obtain capital by selling securities, including stocks and bonds, by borrowing or by other means available to any private corporation; permitting flexible, competitive pricing and contract terms; enabling the enterprise to develop advanced technologies as needed for future competitiveness; creating a board of directors that can provide strong management direction and guidance.

Creation of a Government corporation capable of competitive and businesslike operation will instill customer confidence in the enterprise as a reliable, economic, long-term supplier of enrichment services; increase the return on the taxpayers' investment; enhance the value of the Government's investment in the enterprise; ensure competitive prices of enriched uranium to commercial customers; ensure that operations are conducted soundly and responsibly with regard to public safety and health and in full compliance with the laws protecting the environment; and ensure that uranium enrichment remains a viable part of our national energy strategy.

Restructuring the enrichment enterprise is the single most critical step we can take to ensure that we continue to provide high quality, economical services to industry, the public and the Nation. Timely, decisive action by the Congress is needed now. We are eager to continue to work with you and the Congress to refine the details, particularly between your bill and the bill that the Administration has sent forward as necessary to complete this important action.

Senator FORD. Thank you, Mr. Secretary. It is almost music to my ears.

Let me take three areas here and give some ideas from this one Senator and then ask you three questions regarding the supplemental, inventory and efficiency of operations. Let me kind of give you my view on it.

It will take $120 million in fiscal year 1990 to produce the same amount of SWUs that could be produced with the $55 million in 1989. And in my mind the DOE does not have the flexibility we are talking about to buy power now to make cheap SWUs. The pending supplemental took three months to put together, and the outcome is still uncertain. A business cannot operate in this kind of environment.

The second point I would like to make is that with no inventory on hand, DOE cannot accommodate any increase in sales. Thus, the current structure within DOE penalizes the enterprise when they are successful.

And third, the enterprise is constrained by the budget process. Example: if Congress takes no action to reduce the deficit by at least $36 billion in the near future, the Gramm-Rudman-Hollings sequestration would kick in. This would mean in my figures about a 17.8 percent cut in the enterprise. Not only does this hurt the enterprise's ability to meet current deliveries by reducing their ability to buy power to make SWUs, it undercuts the confidence that we have been able to sustain that the customers would have in the DOE in the future. And we need to cut the enterprise loose so they can make money for the taxpayers.

So, with that little statement in mind, Mr. Secretary, we'll talk about the supplemental a minute. Please tell the committee about the $55 million supplement that is currently pending before Congress, why it is necessary, and will DOE miss deliveries to customers in fiscal year 1989 if the supplemental is not approved in a timely fashion.

Mr. MOORE. Senator, you are absolutely correct. In answering the question and pointing this out to those who have an interest in this matter, if we had an independent government corporation and ultimately a private corporation, we wouldn't be faced with this kind of budget problem, or the kind of inflexibility which requires the Department to come to Congress requesting additional permission. A business and a business board of directors could make the decisions and handle matters on their own.

What it boils down to is very simply DOE through its enrichment services can make higher sales this year than they projected. We can't do it without getting permission from the Congress to spend an additional $55 million in a supplemental appropriation for the cost of doing so, buying power. If they don't do it this year, the cost of power next year will double. This year, it is half the cost of next year. And so, while we may well lose the sales this year to somebody else because we have to go through this budget process of getting permission, if we were to make the number of SWUs next year, it would cost twice as much. So, for every dollar we spend this year, you are saving two next year, a very prudent business decision that the kind of corporation we envision would be able to make. But under the present structure of this being a government agency, we can't do that without coming to Congress.

Some persons may misunderstand it, and they seem to think that, oh-oh, here we go again running into the red needing to bail out this enterprise. Quite the contrary. This is asking for additional seed money to make a greater profit. And if your legislation or that of the Administration would pass, this would not be a necessity in the future.

Senator FORD. We are beginning to make sense, aren't we, Mr. Secretary?

Mr. MOORE. Well, it doesn't make sense to lose business because we don't understand how that business operates. That is precisely what we are about to do if we don't get that supplemental appropriation.

Senator FORD. As it relates to inventory, in years past you have told or the Department has told the committee that, one, substantial inventories of enriched uranium were being drawn down. What is the current status of these inventories? What percentage of the amount you plan to sell in fiscal year 1990 will be out of inventory and what percentage do you intend to produce?

Mr. MOORE. Senator, here is another example of why we really need to go to a corporation. DOE is producing 6 million SWUs in

1989 and selling 12 million. We are drawing down the inventory to where there will be no inventory at the end of this fiscal year. Therefore, in 1990 and years beyond, we are going to have to actually produce what is actually being sold. There will be no inventory whatsoever.

I'm not sure this is a prudent business decision. If we had a corporation with a board of directors, they may have decided when cheap power was available to build up the inventory. But because we have to go through the OMB budget process and come to the Congress, it looks like it is an additional expenditure, and so it is eliminated.

So there again is an example of why we really need to go to a corporate structure where prudent business decisions can be made about when you draw down inventories and when you build up inventories. As it is right now, by the end of the year, there will be no inventory and every sale in the future is going to have to be from the outright production of the facilities.

Senator FORD. Under those circumstances, if you are selling 12 million and you have 6 million that you are producing, next year if you sell the same amount, you will have to produce 12 million.

Mr. MOORE. Exactly.

Senator FORD. And so, you would need more power and workers to do that, wouldn't you, at the same cost? There wouldn't be an additional cost.

Mr. MOORE. Well, we know that producing it next year is going to cost more money because of the power alone.

But you are right. You could run into other additional cost factors when you are not operating as a business. And so, this enterprise is not looking at this as a business venture. It is looking at it as a government entity. We came to Congress. We got—OMB—got permission to spend X number of dollars. That is all we can spend, and if we have an opportunity for a greater market share, we can't do it without coming back to Congress. And if we draw down our inventories, we are leaving ourselves in a position of possibly having no available supplies in the future for some buyer and not being able to produce or to service that business and lose it to somebody else. So, we are making government decisions on a business enterprise.

Senator FORD. Let me move on then to one of the problems, one of the questions that we have in both thoughts, both legislation. That is the repayment to the Treasury.

On March 25, 1988, Secretary of Energy Herrington in a letter to Senator Lawton Chiles at that time from Florida stated the following:

> It has been suggested that the original government investment in the enterprise represents a "debt" which should be repaid through revenues generated by the enterprise. We share the goal of returning to the government amounts representing the investment it placed in the enterprise. However, in our view, these amounts represent an unrecovered investment in the enterprise as opposed to a specific debt for which the enterprise remains liable.

Do you agree with that statement by the former Secretary of Energy? Do you believe that the taxpayers are entitled to a return on their investment, and do you think that the proposed corporation will provide such a return?

Mr. Moore. Senator, we do still agree with that statement of the previous Secretary and the previous Administration. It is consistent with this Administration's policy and with the Department of Energy today.

We believe that the taxpayers are fully entitled to a return on their investment, and it is indeed an investment, not a debt. And we think a Government corporation is the best way to ever possibly achieve that objective. The Government corporation would provide the maximum return on the investment to the taxpayers.

If we operate this enterprise as a business, if it does, as we believe it will, secure a greater market share, operate more efficiently, make technological decisions to perhaps put it in the business of offering the cheapest uranium enrichment services in the world, then that will cause the value of that enterprise to go up from what it is today. And ultimately when it is sold, that value would go into the Treasury, thereby benefiting the taxpayers.

So, at this point we absolutely stand by the letter of former Secretary Herrington and we believe that it is, indeed, an investment, not a debt, and we believe this is the best way to return the investment to the Treasury.

Senator Ford. Mr. Secretary, the legislation that passed the Senate twice during the last Congress required payment of $364 million as the recovery of past costs for the enrichment program through fiscal year 1986. However, the enrichment program has put significant amounts of money into the Treasury in the last two years. If we use the same method used to get the $364 million, but extended it through fiscal year 1988, do you have any idea what the number might be?

Mr. Moore. Yes, sir, we do. We have calculated that on the net appropriations methodology. And we come out with a calculation that at the end of fiscal year 1988, that the amount owed to the Treasury would only be $28 million, or quite a bit less than your bill and the Administration's bill call for.

Senator Ford. The DOE has made some mistakes when pursuing the gaseous centrifuge enrichment program. The project got rolling and picked up so much momentum that it became impossible almost to stop before billions had been spent on it. What steps are you or the agency taking to prevent some of the same things from happening to AVLIS?

Mr. Moore. Senator, that was a bad situation in the past. I hope that the Government has learned something from it, and one is that when you are building something for the marketplace, the Government is not too good a judge of the marketplace, another argument why we ought to go into a corporation. Businessmen and women I think are better able to make the decision of how much capital expenditure is needed to expand for how much market is going to be there.

The primary reason why those investments or that investment failed in the past is that they projected a tremendous growth in the nuclear power industry, and that growth did not occur. Consequently, excess capacity resulted and the project had to be closed at a loss in terms of money that was spent on that excess capacity before it could properly be retired.

We don't see that as a problem in looking at AVLIS. AVLIS is a new technology not only to add capacity, but also to eventually perhaps replace capacity, to see to it that we are using the latest technology to be able to hold and capture additional market share. I think any industry or business that doesn't continue to modernize or use the latest technology will be one that will go out of business.

We have a chance now. The United States has got a substantial lead in this technology. And the pursuit of this technology offers a number of attractive market applications to provide additional incentives to invest in it, to address new market possibilities such as the enrichment of reprocessed uranium, to attract new sales beyond the ability of the efficiency of today's DOE plants, and to replace a limited portion of existing gaseous diffusion plants that have a high marginal cost. The replacement of existing diffusion plants if their cost makes them noncompetitive, and the projected cost of AVLIS should result in the production of a SWU for $25 to $40, which is well below what the Soviets are doing, and we are not sure they're playing exactly fair in their cost figures of what it costs them to produce a SWU. So, we think that this is something you are not looking at in the same light as previous investments. This is new technology.

Senator **Ford**. Do you have a schedule for the deployment of AVLIS? Is there any decision to proceed with the project to its final conclusion?

Mr. **Moore**. No. We've got a lot of work left to do, Senator. No decision to build a plant will be made until the technology has been fully demonstrated to meet technical and economic goals. The demonstration of that could be completed by the end of calendar year 1991.

At this point we are looking into our Lawrence Livermore Laboratory, which has been doing the research in this area, beginning to work with somebody in the industrial sector in order to merge the business and industrial experience with our research abilities at Lawrence Livermore to test this on a scaled-up version quicker than may otherwise be possible. We want to assure that there is the need for it, and that construction of a production plant would meet prudent business, financial and market criteria. And so, we think we do need some business expertise to assist us with this.

We know that the situation is such that the establishment of a government corporation fits very well with the idea of AVLIS as at some point a board of directors would make the decision. Do we want to use this technology or not? Is it really cost effective? And that is what we are saying can better be done under a corporation than can be done under the existing structure.

But to answer your question, no decision has been made yet. We are still in the developmental stage, and we hope by the end of two calendar years or in a year and a half from now to be able to answer that question more definitively. Is this technology really going to work?

Senator **Ford**. Mr. Secretary, it is my understanding that Livermore and Martin Marietta have already agreed to work together in an attempt to put AVLIS together. Is that correct? They have a friendly atmosphere?

Mr. Moore. I have seen a document between the two of them. Lawrence Livermore is doing this as part of our national laboratory system which is part of the Department of Energy, as you well know. Martin Marietta is offering to help. They are interested in it. We at this point are reviewing whether this needs to be considered further.

The work they are doing is for the demonstration plant only, not for the construction of a production plant, but only looking at the demonstration plant side of it. They have begun to talk to one another and we are reviewing that at the present time.

Senator Ford. Let me ask you one final question. My colleague, Senator McConnell, is here, and I am sure he will have some questions and possibly a statement for the record.

What do you project the cost of decontamination and decommissioning of the enrichment plants to be? When do you expect the decommissioning will take place? And to give you a long question, has the Department of Energy collected any money for the D&D? Do you have any authority to collect that money? Is the fund in the proposed corporation a responsible way to proceed in your view? So, I ticked them off there, and I think you can answer them, hopefully.

Mr. Moore. Senator, we project the cost of decontamination and decommissioning of all of the enrichment plants, the three we have now, to be about $3 billion. That is by today's technology. Hopefully we can find some technology that will cost less in the future. About half of these costs are related to our commercial customers, and about half are borne by the Government as being related to the defense or Government customers.

We do not intend to begin any decommissioning until the diffusion plants are actually shut down or closed, obviously. Oak Ridge was shut down in 1985, and we are now proceeding with the first phase of decontamination and decommissioning there. There are no plans to shut down the remaining two plants at Paducah, Kentucky or Portsmouth, Ohio.

The Department of Energy has not collected any money for future decontamination and decommissioning. We think it is something that needs to be done. We need to think about nuclear power or anything dealing with the nuclear industry in terms of collecting those funds now so when those costs come, there is a fund there for it. There is no authority in the law for us to do that. The legislation you have proposed and we have proposed does that, and if we don't get anywhere with the government corporation idea, this needs to be pursued as separate legislation, at least is to come up with the D&D fund which is not authorized now. And so, we don't have that authority. We need it. We would welcome the Congress answering our request for it, and we know you feel from your legislation the same way.

The administration's fiscal year 1990 budget and proposed government corporation would establish a decontamination and decommissioning fund as a responsible way to go about this if we create the corporation.

Senator Ford. Thank you, Mr. Secretary. I will yield to my colleagues. We now have been joined by the distinguished Senator from Alabama, Senator Heflin.

Senator McConnell, do you have a statement or maybe some questions you would like to ask the secretary?

Senator McConnell. Thank you, Mr. Chairman. I do have an opening statement which I would request be put in the record.

Senator Ford. Without objection, it will be put in the record in full.

[The prepared statement of Senator McConnell follows:]

OPENING STATEMENT
SENATOR MITCH MCCONNELL
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
APRIL 19 & 20, 1989

MR. CHAIRMAN, I'M PLEASED THAT THE SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT IS HOLDING THESE HEARINGS ON PROPOSALS TO RESTRUCTURE THE DEPARTMENT OF ENERGY'S URANIUM ENRICHMENT PROGRAM.

MY GOOD FRIEND AND DISTINGUISHED COLLEAGUE, SENATOR FORD, HAS ONCE AGAIN INTRODUCED LEGISLATION, WHICH, IN ONE FORM OR ANOTHER, WAS FAVORABLY REPORTED OUT OF THE ENERGY AND NATURAL RESOURCES COMMITTEE AND PASSED BY THE SENATE TWICE DURING THE 100TH CONGRESS.

I ALSO UNDERSTAND THE ADMINISTRATION HAS SENT US A BILL WHICH DIFFERS SOMEWHAT FROM MY FELLOW KENTUCKIAN'S PROPOSAL, BUT WHICH HAS THE SAME GOAL: RESTRUCTURING OF THE PRESENT URANIUM ENRICHMENT PROGRAM TO MAKE IT MORE COMPETITIVE.

MR. CHAIRMAN, PROPOSALS OF THIS NATURE ARE PROPER, TIMELY AND NECESSARY.

THEY ARE PROPER BECAUSE THEY ADDRESS SOME OF THE BASIC PROBLEMS THAT PLAGUE THE U.S. URANIUM ENRICHMENT PROGRAM IN ITS BATTLE FOR DOMESTIC AND GLOBAL MARKET SHARE.

THEY ARE TIMELY BECAUSE EVEN AS THE U.S. SHARE OF THE GLOBAL ENRICHMENT MARKET STAGNATES OR SHRINKS, THE NUMBER AND CAPABILITY OF COMPETITORS GROWS.

THEY ARE NECESSARY BECAUSE IF THIS COUNTRY IS TO REGAIN AND MAINTAIN DOMESTIC AND GLOBAL MARKET SHARE, IT IS GOING TO NEED SOME OF THE BASIC STRUCTURAL CHANGES OUTLINED IN THESE PROPOSALS.

AS I MENTIONED EARLIER, WE HAVE BEFORE US TWO PROPOSALS. I VOTED FOR SENATOR FORD'S PROPOSAL ON THE FLOOR OF THE SENATE TWICE LAST YEAR. I WANT TO HEAR TODAY FROM SECRETARY MOORE EXACTLY HOW THE ADMINISTRATION'S APPROACH DIFFERS FROM THAT OF MR. FORD'S BILL AND WHICH WOULD BE BEST FOR NATION.

I ALSO WANT TO DETERMINE OVER THE NEXT TWO DAYS WHAT IMPACT, IF ANY, THE RESTRUCTURING OF THE URANIUM ENRICHMENT PROGRAM MIGHT HAVE ON THE ABILITY OF THE PADUCAH GASEOUS DIFFUSION PLANT TO BECOME THE FUTURE SITE FOR AN AVLIS-BASED URANIUM ENRICHMENT SITE IF AND WHEN AVLIS IS PROVEN TO BE A VIABLE ALTERNATIVE TO GASEOUS DIFFUSION.

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Page 3

The ~~THIS~~ CONCEPTS BEHIND THIS LEGISLATION ARE VERY COMPLEX AND I COMMEND THE ABLE AND HARD WORK OF MY COLLEAGUE FROM KENTUCKY~~,~~ AND I LOOK FORWARD TO HEARING FROM OUR WITNESSES TODAY AND TOMORROW.

Senator McCONNELL. Secretary Moore, you mentioned in your testimony that the administration has sent up a bill which, as I understand it, is similar to Senator Ford's. I have not really had a chance to look at your bill yet. Could you indicate to us the essential differences between the two? And is one approach better than the other? Is there much difference between the two?

Mr. MOORE. Senator, first let me say that we would very much appreciate your reviewing this bill and we would appreciate your comments concerning it as we know that you are also vitally interested in this area.

Second, we prefer to dwell on the similarities of the two bills. I think if you sat down and tried to weigh this thing, we are 80 to 90 percent alike, and the differences are things we hope to be able to work out in a markup to where this committee would produce a bill that would be very, very close to both versions.

But there are some differences. Number one, one of the first differences is the fact that we do provide in the bill a structure to definitely privatize the government corporation and produce a sale, with a certain timeframe. That is sort of left open for additional action or coming back to Congress under Senator Ford's version.

And second, we do call for a board of directors, and we do call for a chairman of that board, as a true business would operate, which is a little bit different organization I think than the Ford bill proposes.

And other than that, the differences are very minor.

Senator McCONNELL. The cost of electricity is a very large component of the cost of the gaseous diffusion technology. It is such a large component that DOE is seeking new uranium enrichment technologies, as we all know, which will use less electricity and be, therefore, we all hope, more efficient.

Would you agree that it is safe to assume that any increases in the cost of electricity delivered to Paducah or Portsmouth could significantly raise the production costs at these facilities and in turn further erode the efficiency of the uranium enrichment industry and its ability to compete for a domestic and global market share?

Mr. MOORE. Senator, absolutely. As you well know, one of the largest cost items by far, in terms of producing the enriched uranium services, is the cost of power. And if there is any increase in that power cost at all, it can really affect the ability of our two functioning plants to be able to compete.

Senator McCONNELL. Studies indicate that many of the acid rain proposals being looked at now would significantly raise the cost of electricity. Can we assume then, Mr. Secretary, that the passage of acid rain legislation will hurt the efficiency of the enrichment program?

Mr. MOORE. We'll have to wait and see what the administration comes up with. We are very concerned about how that may affect those two facilities. And we have looked at how that was proposed to be handled in the past. We are trying now to draw some conclusions about how to handle this in a new acid rain bill. We are very concerned about it. It could have a dramatic effect on it.

Senator **McConnell**. Do you believe that passage of acid rain legislation might force the government to continue to spend money developing new technologies like AVLIS which use less electricity?

Mr. **Moore**. Senator, what is the first part of the question? I'm sorry.

Senator **McConnell**. Well, if the passage of acid rain legislation drives up the cost of electricity, as we anticipate it would, does that inevitably result in spending more money developing technologies like AVLIS which we assume will use less electricity?

Mr. **Moore**. Well, we would like to see a situation where we can accommodate the clean air requirements and acid rain requirements, while operating competitively, and at the same time develop a new technology. But I think it is obvious that we have a short interim period of when acid rain legislation may take effect and AVLIS may come on stream, if it ever does. That is a decision that has to be made by this corporation, is that technology really feasible and, after a demonstration plant is constructed, does the technology really work.

So, there may be a situation where an AVLIS plant may not be coming on for some time and may not be technologically or economically feasible. So, we are very concerned about doing anything that forces the idea that the only survival of these enrichment facilities would be upon some new technology. We are not sure the technology is really going to work. We believe in it. We are pursuing it. But to sit here and make a decision today on acid rain legislation that would result in the closure of these two plants based on some future technology that we are not satisfied has been proven yet, we don't feel at all comfortable with that kind of decision.

Senator **McConnell**. You and Senator Ford have already been talking about this, and I hope we are not rehashing too much.

You and I have had in my office and on other occasions a number of discussions regarding the development of AVLIS technology and the likelihood that it may eventually replace the gaseous diffusion technology which might result in the closing of either the Paducah or the Portsmouth facility. You mentioned in your testimony that AVLIS holds the potential to enrich uranium at about one-half the cost of gaseous diffusion technology.

Could you give us an update, if there is any, on the development of AVLIS technology or has nothing essentially changed since we last spoke?

Mr. **Moore**. Really nothing essentially has changed and no decision has been made. We have to move toward a demonstration project. At the same time we are doing that, we have set into motion a site selection plan that we have submitted to your office which is a long way away from that decision being made. We still have—and we did want to say and I did say in my testimony and I think in answer to a question by Senator Ford, that we have no plans to close down any gaseous diffusion plant now.

The only way that would ever occur is if we lost our market where we only needed one plant, or if we didn't develop a technology to stay in business, or if we do develop AVLIS and it proves to be so economically justifiable that you couldn't make money and stay in business any other way but with that one or that one coupled with one of the gas diffusion plants. Those decisions have to be made in the out-years and to a certain extent by this corporation.

Senator McCONNELL. So, it is safe to say that nothing has happened since we spoke in terms of developing site selection criteria or any of those other aspects.

Mr. MOORE. That is absolutely correct. Nothing has taken place. And I will assure you, Senator, that due to the sensitivity the two of you have for this and your leadership in the area, nothing will take place without your knowing about it.

Senator McCONNELL. Under Senator Ford's proposal, the new wholly-owned government corporation would be directed by an administrator and a five-member advisory board appointed by the President. Should this type of legislation become law, how would it affect the future development of AVLIS?

Mr. MOORE. We will pursue the direction and the development of AVLIS as a DOE project even if this becomes a corporation. Whether that corporation decides to use that technology is a decision that either its board of directors under the Administration's plan or its group of administrators and board of advisers under Senator Ford's plan would make. The decision of whether to utilize that technology ultimately should be made by this corporation. What we shall pursue as a DOE project is the demonstration of the AVLIS technology.

Senator McCONNELL. How would it affect the site selection of the new AVLIS facility?

Mr. MOORE. At this point, we don't see how it could or would. That is something that has to be developed over the next several years as site selection is done. At this point, we would like to believe that AVLIS would be justifiable to be included in any one of the three facilities we have and perhaps even another.

Senator McCONNELL. I guess my question is assuming the legislation were enacted this year, who would make the selection of the site? The board or DOE?

Mr. MOORE. The board would.

Senator FORD. Are they with advice and consent of the Senate? [Laughter.]

Mr. MOORE. I think what I hear coming is the board is going to be composed of seven or eight Kentuckians, is that right, out of seven or eight members? [Laughter.]

Senator McCONNELL. Senator Ford and I are available for service on this board.

Senator FORD. Speak for yourself, Mitch. [Laughter.]

Senator McCONNELL. The restructuring proposals before us would put the U.S. uranium enrichment program on a more sound footing and enable it to better compete in the domestic and global market. The intent is obviously to make the U.S. program more efficient and better able to deal with what has become this global market.

As I understand it, the purpose of developing the new AVLIS technology is to address the efficiency concerns which exist with the present gaseous diffusion technology. Thus my question.

In your opinion, if we pass legislation which restructures the corporation along the lines just discussed and, indeed, the program becomes more efficient and regains market share, is it logical to assume that we might be able to continue to operate two facilities using gaseous diffusion technology and not have to worry about developing AVLIS?

Mr. **Moore**. Certainly, Senator, that is possible. That is a decision this board would make. If it becomes very efficient with additional efficiencies built into the gaseous diffusion plants, by making them a corporation, they began to do things that the Chairman and I were talking about where we may lose market share this year because we don't have additional budget authority to buy more power to produce more SWUs this year, if the business could make more businesslike decisions of that nature, and then the technology of AVLIS comes on board and lowers the per unit costs, it may still be—it is a possibility—that for many years into the future, you would have one or more of the gaseous diffusion plants operating right along with AVLIS. Yes.

It's a question of economics in the marketplace, that's the decision this board has to make. But certainly there is nothing that would prevent that. There are many industries across the country that have the very latest technology operating and some older plants still on stream because the average unit cost is competitive.

Senator **McConnell**. Representative Marilyn Lloyd and others accused the Soviets of unfair trading practice, and Representative Lloyd has introduced a bill in the House to halt the import of Soviet enriched uranium into the U.S.

In your opinion are the Soviets selling their enrichment services at prices below their production cost? In other words, are they engaged in unfair trade practices?

Mr. **Moore**. Senator, we don't know, but we are very concerned. In my years in the other body on the trade subcommittee, we found it very hard to determine what a real fair market price is in a controlled economy such as the Soviet Union. This was reviewed by the Department three or four years ago. I have asked that it be re-reviewed because of the alarming and increasing amount of Soviet produced and Soviet indirect produced SWUs that are coming into this country.

If we have to compete—if we compete, rather—it is going to be fairly. If we are competing with something that is not fair, then we intend to pursue whatever legal remedies are available to us. So, we don't have the answer yet. We are taking another look at that, and I'm very concerned about it.

Senator **McConnell**. What did you make of Gorbachev's statement—was it last week—that the Soviets were getting out of the uranium enrichment business? I assume that meant only for weapons production. But what did you make of that statement?

Mr. **Moore**. Well, Senator, some of that is classified, and certainly we will be willing to sit down and visit with you. But let's say the Department of Energy is not enthralled with his statements and do not really think they amount to anything of a meaningful nature.

Senator **McConnell**. Okay, Mr. Secretary. Thank you very much.

Senator **Ford**. Senator Heflin?

Senator **Heflin**. I don't have any questions.

Senator **Ford**. Do you have any statement you would like to make for the record?

Senator **Heflin**. No.

Senator **Ford**. Thank you.

Senator Domenici, we are delighted to have you.

Before I do that, Senator McClure, the ranking member of the full committee, has a statement as it regards the uranium enrichment program. I would like to enter his statement in the record at this time.

Thank you, Pete.

[The prepared statements of Senators McClure and Burns follow:]

OPENING STATEMENT
SENATOR JAMES A. McCLURE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
APRIL 19, 1989

URANIUM ENRICHMENT (S. 83, AMEND. #6)

Good afternoon. I am pleased that Senator Ford has scheduled these two days of hearings on legislation to restructure the Department of Energy's uranium enrichment enterprise. The Committee, as well as the Senate as a whole, spent a great deal of time last Congress on this matter, and had it not been for the lateness of the "hour", I'm sure we would have been able to work out a final package with the House.

Instead, we are here once again to review a proposal which, in essence, is the final version of last year's attempt to restructure the Federal government's uranium enrichment enterprise. No one who has followed this debate needs to be convinced of the necessity to deal with this matter, for it is all too clear that the present structure of our enrichment enterprise is severely constrained in its ability to respond to today's market challenges.

The U.S. enrichment "business"- such as it is - is strangled by the Congressional budget and appropriations processes. It cannot easily make any short-term adjustments or long-term commitments. And, it basically is unable to effectively compete with its more progressive, business-oriented counterparts around the world. We are rapidly losing customers to competition from abroad. I am concerned that some of this competition is in fact subsidized. I am extremely concerned that now that Russia has freed up some of its enrichment capacity that had previously been dedicated to weapons production enrichment, and that it will now, in its thirst for hard currency, make deals that will be hard to resist.

Were it not for the fact that certain utility customers have chosen to remain faithful to the U.S. enrichment services, in the hope that Congress would soon act to improve the situation, I'm sure that things would be even worse. What is clear is that all domestic customers of the enterprise have a stake in insuring its continuing economic viability.

It is up to this Congress to come to grips with the fact that our enrichment enterprise cannot survive as a creature of the Federal bureaucracy at a time when market forces demand a more responsive structure. Greater fiscal autonomy is required.

We must see to it that legislation is enacted that will allow the enterprise to develop long-range marketing strategies, deploy new technologies, have access to investment capital, realize a return on its investments, and to better serve the needs of its customers.

No matter your vantage point, whether this matter is viewed from the perspective of the bureaucrat, or the budget cruncher, or the taxpayer, or the customers -- the final conclusion is the same: we need to turn the enrichment enterprise into a creature that thinks, looks, acts, and responds like a business.

I am anxious to hear from our witnesses today and tomorrow concerning Senator Ford's amendment to S. 83. Furthermore, I am looking forward to the hearing scheduled for May 11, when we will receive testimony on the Domenici amendment dealing with revitalization of the nation's uranium mining industry and funding for cleanup of mill tailings. Then we will have all the necessary pieces so we can deal with this issue as a whole package, as we did in the last Congress.

Senator Burns

STATEMENT BEFORE THE SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT

April 19, 1989

Mr. Chairman, I would like to thank Deputy Secretary Moore and our distinguished panel for taking the time to testify before this subcommittee. I look foward to hearing their views on Amendment 6.

Mr. Chairman, I realize this issue was addressed in the previous Congress. As a new Member of the United States Senate, I look forward to attempting to again move a piece of legislation that will revitalize our domestic uranium industry and provide an adequate supply of enriched uranium for commercial and defense purposes. I understand the Committee worked diligently to pass a bill last year that would be agreeable to a variety of different interests. The Bill did not get out of the House because of an issue on trade with Canada. A solution has been now reached in the Free Trade Agreement, so we can move the legislation ahead again.

Today's hearing will focus primarily on Amendment #6. We are all aware that the main source of controversy will center upon the amount the new corporation is required to pay for past deficits. As an individual who prides himself on attempting to ease the burden of U.S. taxpayers, I will be very interested in the recommendations of our witnesses on this issue.

Mr. Chairman, I commend you and the subcommittee on your these efforts to resolve this problem of uranium enrichment for our future.

STATEMENT OF HON. PETE V. DOMENICI, U.S. SENATOR FROM NEW MEXICO

Senator **Domenici**. Mr. Chairman, let me say that I can be with you for 15 or 20 minutes, and then it is my hope that I will be able to be more helpful in that I think we will have the budget finished.

I am very pleased that you are having a hearing on uranium enrichment. I think it is one of the most critical areas deserving of our attention here in the Congress, an area that we have been supreme in, that we really were the world's leader in, being taken right out from under us, a part of it by our own inaction, part of it because we have a technologically changing world. And I think it behooves us to do what we must to preserve that industry. It's a very good balance of payments trade issue but, more importantly, it is absolutely significant for our country that we remain a vital player there.

In addition to thanking you, Mr. Chairman, for having these hearings with reference to the industry, I would like to talk about just two or three problems. They may be more suited for other witnesses, but I want to say to the Secretary I will put all four of them here on you because I am not going to be able to stay for other ones.

One of the problems is the sudden influx of Soviet enriched uranium, and I hope we will be talking about that in more detail, if we can't today, at another time. If we had enacted our provisions on flag swapping in the last Congress, we might have the facts on this. In the last Congress we attempted that. We didn't get it through.

But let me say, Mr. Secretary, I believe that we gave the Energy Information Administration sufficient authority in 1982 to require that the utilities of this country fully document the origins of their uranium. I hope you will join me, Mr. Chairman, in seeking to get the EIA to exercise that authority. And since the EIA is directly tied to the Department of Energy, I hope you will help us with that, Mr. Secretary.

I would also ask the Chairman to have the staff explore for the hearing on uranium on May 11 an allegation that is getting more and more prominent, that those companies which publish spot market prices are also brokers of uranium, and that they might be benefiting from the fact that they do both these functions. I haven't seen anyone in the audience that might be part of this either squirm or raise their hand to deny this, but let me suggest that it is reaching rather serious proportions in my opinion.

I see by the testimony that we are going to take here today that the utility testimony says that the compromise legislation which they agreed to last year is now too expensive. It would have cleaned up the mill tailings and bought U.S. uranium for the stockpile in addition to fixing the enterprise business. It was a three-legged stool, all of which was very closely related.

I look forward to hearing on the 11th of May how it is that things have changed in their minds since they agreed to support the three-legged approach that we put together which would have put the enrichment business on a sound footing, would have given American uranium companies a reasonable chance in the next five or six years to survive and would have provided the basis for mill tailings cleanup in a number of states of the Union which should not be bearing the entire burden since a substantial portion is the result of government regulated and government managed activities in the uranium mining in the past.

Thank you very much, Mr. Chairman.

Senator FORD. Thank you very much, Senator Domenici.

I have no further questions of the Secretary. Does anyone else have anything?

Senator MCCONNELL. Mr. Chairman, just one final if I may, and then I'm through.

Mr. Secretary, I read recently that DOE is looking at the possibility of building light water nuclear reactors dedicated to powering the Paducah and Portsmouth plants. The idea, as I understand it, is to develop a cheaper source of energy for the uranium enrichment facilities.

Do you have any comment on that or is this premature?

Mr. MOORE. Senator, I am informed that we have not done a study at DOE about this. There has been some indication that the nuclear energy industry has made a suggestion that this be explored by us and be looked at as a way to cut the cost there, but we have not looked at it yet.

Senator MCCONNELL. Thank you, Mr. Secretary.

Thank you, Mr. Chairman.

Senator DOMENICI. Mr. Chairman, might I just say to the Secretary you heard my contention that you already have authority under the 1982 statute which we passed out of this committee and became law with reference to documenting the origins of uranium. While I am not going to ask you today—I wouldn't do that to you—I do hope you will look into that. I do not think I am wrong, but I am not asking you to determine that.

I hope you know that we are worried about this flag swapping. We have enough difficulty maintaining uranium enrichment in this country and trying to maintain a little semblance of uranium production out in the mining field, and this isn't going to make it any easier. So, I hope you will look into it.

I am going to ask the Chairman to call the appropriate witnesses, including EIA, up here on May 11, and they are going to have to have some answers I believe.

Mr. MOORE. Senator, we intend to get an answer back to you as best we can by letter before then. We share your concern. The intelligence reports we have seen and you perhaps have seen indicate that this is not going to be a phenomenon that is going to go away in terms of the Soviets targeting our markets. And we believe, as we said before you were able to join us, that uranium enrichment is a vital part of our national energy policy. And so, we are very concerned about it as well.

Senator DOMENICI. Thank you, Mr. Chairman.

Senator FORD. Thank you.

Mr. Secretary, you have been an excellent witness, and I have enjoyed working with you so far. There are a few bumps in the road, but we have always been able to smooth them out. And I am delighted with your attitude and the effort of the Department and look forward to continued cooperation. Thank you very, very much.

Mr. MOORE. Thank you, Senator.

Senator **Ford**. The next witness will be Joseph M. Farley, President and CEO, Alabama Power, on behalf of Edison Electric Institute and American Nuclear Energy Council. Mr. Farley, it is good to see you again and have you here.

Mr. **Farley**. Thank you, sir. Glad to be here.

Senator **Ford**. We have a new member on the committee to face you also.

Mr. **Farley**. I've noticed that with great pleasure I might add.

Senator **Ford**. Fine. You may proceed with your statement. We will have a few questions.

STATEMENT OF JOSEPH M. FARLEY, EXECUTIVE VICE PRESIDENT-NUCLEAR, THE SOUTHERN CO., ON BEHALF OF THE EDISON ELECTRIC INSTITUTE AND THE AMERICAN NUCLEAR ENERGY COUNCIL

Mr. **Farley**. Thank you, sir.

My name is Joseph M. Farley. I am Executive Vice President-Nuclear of The Southern Company, and I am here today as Chairman of the American Nuclear Energy Council. I am here to make a statement concerning the future of the domestic uranium enrichment enterprise on behalf of ANEC and the Edison Electric Institute which is the national association of industrial-owned electric utility companies in the United States.

I have, of course heard already your opening statement, sir, and that of Secretary Moore, and much of what I have in my prepared testimony submitted to the committee is in full accord with your opening statement and with that given by Secretary Moore.

For American electric utilities, the Department of Energy's enrichment enterprise is the primary supplier of uranium enrichment services. Each year more than 100 utility reactors in the U.S. consume approximately 10 million separative work units, or SWUs as we refer to them, of uranium enrichment services with a value of about $1 billion.

Unfortunately, the future of viability of the DOE enterprise is now in question. The availability of more cost effective and customer responsive enrichment services abroad has seriously eroded the overseas customer base of DOE's enrichment enterprise and now threatens to do the same thing to the enterprise's domestic commercial market.

This situation we believe, as I believe that you do, is a direct result of the way the U.S. enrichment enterprise is structured. As opposed to a flexible market-oriented, competitively priced business operation, the DOE enrichment enterprise is statutorily bound by some inefficiencies that are inherent in big government operations. We certainly do not mean to say by that that there has not been a significant effort on the part of DOE and its officials to accommodate to the marketplace as best they can. But as you have heard already and as questions and answers have indicated, many times that is simply not possible.

Restructuring, as you know, is not a new idea. Already earlier you have referred to the study that was commissioned by the House in 1984 and the report that they gave back to the Congress urging even in 1984 a restructuring of the enterprise. So, it is not a new idea and certainly the action of the United States Senate last year in looking at this restructuring has confirmed that desirability.

DOE's customers have expressed a number of concerns when evaluating the Department's future effectiveness as a supplier of enrichment services. One of the most important concerns involves the cost of the prior unrecovered costs, as it is termed, which some groups have argued should be considered as a debt of the enrichment enterprise. DOE's customers know that to the extent that this mythical debt is included in DOE's prices, its competitiveness will be further eroded and its ability to survive as a future supplier will be compromised.

While the arguments on this issue are complex and often we believe convoluted, the facts are clear. DOE's commercial customers have paid their full share of all past costs and are not responsible for any debt. Equally true is the fact that DOE itself owes no debt. The only so-called unrecovered costs are those represented by the government's equity in the enterprise. The return on this equity, which is not unlike the stock equity in a business corporation, will be whatever the business can earn with well managed costs and prices as determined by the marketplace. It is clear that a "debt" simply does not exist.

A review of the legislative history shows that the prices charged utilities since 1969 were set in accordance with the requirements of section 161v of the Atomic Energy Act. That section is the guideline for setting the price of enrichment services offered to commercial customers. Nothing in the statute ever required the enrichment enterprise to make payments to the Treasury while the facilities, which were originally built to support the national defense, were used to produce commercial enrichment services.

In any event, the consideration of this so-called past debt must recognize the realities of the future. One simply cannot burden any business with a debt larger than the marketplace will support. To do so would ultimately lead to the loss of more customers and ultimately to the collapse of the enterprise itself with resulting extra costs to the taxpayers through the increased cost of uranium enrichment for military needs.

After a review of Amendment 6 of Senate Bill S. 83, we have concerns about three provisions, namely, those addressing the allocation of decontamination and decommissioning, the D&D costs, licensing requirements and the Federal tax status of the new corporation.

We agree with Congress that an acceptable means must be provided to assure that sufficient funds exist in the future to perform D&D operations at the facilities used in DOE's enrichment program. We also agree that those who benefit from the operation of these facilities should provide the necessary funds. The utility industry considers it essential that D&D costs are allocated in a fair and reasonable manner between commercial, both domestic and foreign, and defense customers, and that those costs should be recovered in the pricing of future enrichment services. We believe that the historical percentage use methodology provided in Amendment 6 would be an acceptable way to proceed.

In regard to the licensing provisions in Amendment 6, the industry agrees that any new enrichment facilities should be subject to appropriate licensing requirements of the Nuclear Regulatory Commission. However, to subject the existing enrichment facilities to NRC licensing requirements at this point in their useful lives will add significant costs to their operation and will adversely affect their ability to be competitive and will provide no additional safety benefits. The existing facilities have operated safely for the past 30 to 40 years and continue to be safely operated under DOE's supervision, and we believe that could continue to be the case under the government corporation. Therefore, we believe it is premature to require the new corporation to embark upon a licensing process until the privatization feasibility study is completed and Congress directs that licensing is required to accomplish complete privatization.

An issue which was not completely resolved during the Senate's passage of comprehensive uranium legislation last year was the Federal tax status of the restructured government corporation. Under the plain reading of the Internal Revenue Code, that is, section 501(C), there is a strong possibility that a congressionally chartered corporation, whether or not U.S. Government-owned, will be subject to Federal income tax absent an express exemption contained in the legislation. We believe potential tax issues and uncertainties should be addressed in the legislative process at some point rather than being left to subsequent resolution by Internal Revenue Service audits, rulings or regulations. Therefore, we would urge that Amendment 6 should include language which clearly exempts any restructured government enrichment corporation from the payment of both Federal and state taxes.

While much time has been spent analyzing the history of the enrichment program and the manner in which the enterprise has been run over the past two decades, that history is less important than the need to restructure the enterprise now so that it will be a winner in the future rather than more concerned about what has happened in the past. It simply must be a competitive domestic enterprise to remain a potent force in the world market.

EEI and ANEC encourage Congress to move quickly in its consideration of the proposed enterprise restructuring legislation. It has the potential to address many of the serious problems faced by the enrichment enterprise. Conversely, the wrong move on the restructuring legislation, such as establishing a higher debt or unnecessary licensing requirements, could cost electricity ratepayers billions of dollars. One of the amendments proposed for attachment to the legislation—and this was alluded to by Senator Domenici—namely, Amendment 10, includes provisions unrelated to the welfare of domestic enrichment. In our opinion that amendment, which addresses the revitalization of the uranium mining industry and the stabilization of mill tailings, would present the electric utility industry and electric consumers with an excessive cost burden. However—and I want to emphasize this—we remain open to reasonable proposals to address uranium industry issues and will work with the Congress to achieve a fair and equitable legislative package.

We thank you for the opportunity to be here and are greatly encouraged at the holding of this hearing and at the progress that is being made in moving toward the restructuring of the enterprise.

[The prepared statement of Mr. Farley follows:]

Testimony by

Joseph M. Farley
Executive Vice President-Nuclear
The Southern Company

on Behalf of the
Edison Electric Institute
and the
American Nuclear Energy Council

to the

Energy Research & Development Subcommittee
Energy & Natural Resources Committee
United States Senate

on

Uranium Enrichment

April 19, 1989

Mr. Chairman and Committee Members:

I am Joseph M. Farley, Executive Vice President-Nuclear of the Southern Company and formerly President of Alabama Power Company for nearly 20 years. I am Chairman of the American Nuclear Energy Council (ANEC), and I am here today to make a statement concerning the future of the domestic uranium enrichment enterprise on behalf of the Edison Electric Institute (EEI) and ANEC. EEI is the national association of investor-owned electric companies. Its members serve approximately 73 percent of all ultimate electricity customers in the nation. ANEC represents over 100 domestic and international organizations having an interest in nuclear energy.

The Southern Company is the parent firm of five electric utilities, serving more than 10 million people across the southeast. The two largest of these, Alabama Power Company and Georgia Power Company, operate six nuclear units with a combined capacity of more than 5600 megawatts. These plants, recognized as some of the best performing nuclear energy plants in the country, produce billions of kilowatt-hours of dependable electric power every year and represent a major commitment by the Southern Company in nuclear energy.

For the United States as a whole, nuclear energy provides nearly 20 percent of all generated electricity. The primary advantage of nuclear energy as a reliable and cost-effective means of generating electricity is the low cost of nuclear fuel. To maintain these benefits for consumers, we must have a reliable, low cost supplier base for uranium enrichment services. This is focus of my statement today.

For American electric utilities, the Department of Energy's (DOE) enrichment enterprise is the primary supplier of uranium enrichment services and has been since the inception of commercial nuclear power. However, the future viability of the enterprise is now in question. The availability of more cost-effective and customer-responsive enrichment services abroad has seriously eroded the overseas customer base of DOE's enrichment enterprise and now threatens to do the same to the enterprise's domestic commercial market. While difficult factors affecting the competitiveness of many American industries include lower overseas wages and the implementation of more advanced technologies, the U.S. enrichment enterprise's problems are primarily a direct result of the way it is structured. As opposed to a flexible, market-oriented, competitively-priced business operation, the DOE enrichment enterprise is a wholly-owned and operated government entity, statutorily bound to the inefficiencies inherent in big government operations.

EEI and ANEC believe Congress should take action to save this vital American resource. Five important reasons dictate this: (1) the utility industry wants a reliable domestic source for enrichment services to ensure our energy security and provide for our national defense; (2) a large customer base is needed to furnish economical and competitive enrichment services for both commercial consumers and defense needs; (3) we should do what is necessary and prudent to retain skilled labor jobs in the United States rather than driving commercial customers overseas; (4) a secure source of funding is needed in order to assure the development and deployment of the AVLIS advanced enrichment technology which offers the potential for low cost production in the future; and (5) the lower cost of producing electricity with nuclear energy should be preserved. This latter point is essential to assure reasonable electricity costs for utility customers, particularly the commercial businesses in our nation who face fierce international competition.

Meaningful, long-term legislative solutions to the challenges faced by the enrichment enterprise are required. A short-sighted approach, relying on ineffective quick-fixes, will serve only to compromise our energy security and increase national defense costs down the road. An equitable and effective way to preserve and enhance competitive uranium enrichment services in the United States is essential. Our interest in this issue is understandable. Domestic nuclear utilities are DOE's primary commercial uranium enrichment customers. Each year the more than 100 utility reactors in the U.S. consume approximately 10 million Separative Work Units (SWUs) of uranium enrichment services with a value of about $1 billion. We are pleased to see the Senate considering ways to breathe vitality into DOE's troubled domestic uranium enrichment enterprise.

Restructuring of the Federal Enrichment Enterprise

As stated earlier, the DOE uranium enrichment enterprise, our country's only domestic source for enrichment, faces stiff competition from overseas suppliers. The loss of domestic jobs and export business is both unnecessary and unfortunate. However, it is likely to continue as DOE's customers are enticed to contract for more competitive foreign enrichment services. We believe that an effective way to reverse this trend is to restructure the uranium enrichment enterprise to achieve a more flexible and customer-responsive operation. One of the mechanisms Congress should consider is the creation of a government enrichment corporation to establish a clear business-like direction for the provision of enrichment services and to enhance the stability and competitiveness of the domestic enrichment enterprise. This would protect domestic jobs and make our enrichment export business more competitive.

Restructuring is neither a unique nor a new idea. The merit of restructuring has long been recognized by many parties. As you have already heard today, DOE believes restructuring is the solution to many of the problems facing the enterprise. And, as you know, the Senate passed restructuring legislation two times last year. In the House of Representatives, consideration of this issue has also been marked by a lengthy history of exhaustive review. For example, in 1984, the House of Representatives formed a Tri-Committee Business Advisory Panel to review the operations of the enterprise. Several of that panel's recommendations have already been achieved by DOE. However, a principal recommendation calling for the restructuring of the enterprise has not been accomplished, since Congressional action is required to do so.

The chief finding of the House Panel was:

> *The current management of the Office of Uranium Enrichment has made progress in going from a technology-driven to a market-driven mode of operation. However, there is an urgent need for further improvement, and DOE should accelerate the transition.*

As a result of this finding, the Panel recommended that:

> *Congress and the Secretary of Energy should take steps to establish a private business management structure for the enrichment enterprise. Alternative institutional structures under government ownership should be examined. The proper structure would further the business objective of the enterprise and be compatible with an approach to privatization of enrichment services.*

The Panel recognized that the structure of the current enrichment enterprise may have been adequate when DOE held a monopoly on providing enrichment services, but with its current organization and financial structure, the enterprise cannot survive in today's highly competitive international marketplace. Consequently, a new organizational structure is essential to the enrichment enterprise's ability to provide for the long-term enrichment needs of both its commercial and defense customers.

The "Unrecovered Cost" Issue

DOE's customers have expressed a number of concerns when evaluating the Department's future effectiveness as a supplier of enrichment services. One of the most important concerns involves the issue of the "prior unrecovered government costs," which some groups have argued should be considered as a debt of the enrichment enterprise. DOE's customers know that to the extent this mythical debt is included in DOE's prices, its competitiveness will be further eroded and its ability to survive as a future supplier will be lost.

While the arguments on this issue are complex and often convoluted, the facts are clear. DOE's commercial customers *have* paid their full share of *all past costs* and are not responsible for *any* debt. Equally true is the fact that DOE itself owes no debt. It is clear to the utility industry that the only "unrecovered costs" are those represented by the government's equity in the enterprise. The return on this equity will be whatever the business can earn with well-managed costs and prices as determined by the marketplace. We think it is clear that a "debt" simply does not exist. Four reasons for this position are:

(1) A review of the legislative history shows that the prices charged utilities since 1969 were set in accordance with the requirements of Section 161v of the Atomic Energy Act. That pricing methodology has been repeatedly reviewed by the General Accounting Office (GAO) and the Joint Committee on Atomic Energy. In 1970, both GAO and the Joint Committee reaffirmed this pricing criteria; the Joint Committee, in fact, *denied* the Atomic Energy Commission's recommendation to raise prices using a different methodology in order to send money to the Treasury.

(2) Section 161v is the guideline for setting the *price* of enrichment services offered to commercial customers. *Nothing* in the statute ever required the enrichment enterprise to make payments to the Treasury while the facilities--which were originally built to support the national defense--were used to produce commercial enrichment services.

(3) Utilities, as *customers* of the enterprise, ***have paid*** ***in full*** for enrichment services which were performed by DOE and its predecessors, and they have never agreed to accept an obligation in addition to the contractual prices that they have been charged.

(4) The federal government has an *equity* interest (analogous to a stockholder) in DOE's enrichment facilities. It does not have the debt interest of a bond holder. This equity interest cannot be considered a debt that electric utilities should pay, because there has never been an intent to transfer ownership to the utilities. The United States Government owns the facilities now, just as it will continue to own them if the enterprise is restructured into a government corporation.

Although DOE, the Office of Management and Budget (OMB), and many members of Congress have agreed that an equity-based approach clarifies and appropriately resolves the "prior unrecovered government costs" issue, it is important to understand the origin of the confusing and widely publicized allegations of the existence of a massive debt on the enrichment accounts. The origin of this confusion appears to be the result of the most recent analysis by GAO which was published in an October 1987 report entitled "Uranium Enrichment--Congressional Action Needed to Revitalize the Program." In that report, the GAO suggested that an amount of $8.8 billion is the value of unrecovered costs. This latest GAO approach presents a new and very different interpretation of the pricing criteria called for under section 161v of the Atomic Energy Act of 1954. Moreover, it is a radical departure from earlier GAO positions during the 1960's, the 1970's and the early 1980's. In fact, as recently as August 10, 1984, in a letter to Congressmen Dingell and Ottinger, GAO stated:

> *DOE is not required to have a formal plan for repaying the Treasury for the government's cost of providing uranium enrichment services,* ***nor does the legislative history indicate*** *that the Congress intended the program to make specific repayments to the Treasury as is the case for some other programs.*

Congress provided specific guidance, year-after-year, for the program to proceed on the basis that revenues are to be used to offset outlays. This means that fees paid by DOE's utility customers have funded all aspects of the commercial enrichment program, from day-to-day operation to capital expansion to research and development of the AVLIS program. That is the way the program has been run by this and previous Administrations.

While certain groups and individuals have attempted to describe the history of the enterprise using their own unique ground rules and accounting terms, these arguments have offered more confusion than clarity.

By failing to perform an allocation of costs among the three basic functions served by the enterprise -- namely defense, commercial and non-proliferation -- the October 1987 GAO report is misleading and provides the mistaken impression that commercial customers have not fully paid for enrichment services rendered. *This is completely false.* The equity-based approach, such as the Senate adopted last year, is *not* a "bail-out" for electric utilities nor a subsidy by taxpayers. We believe the establishment of a Government Corporation with a $364 million initial debt is a fair and reasonable way to proceed.

In any event, any consideration of a past "debt" must recognize the realities of the future. One simply cannot burden *any* business with a debt larger than the marketplace will support. To do so would quickly lead to the loss of more customers and ultimately to the collapse of the enterprise itself. Should this happen, export business, skilled jobs, a reliable source of domestic enrichment supply, and our ability to attain nuclear non-proliferation goals would be lost. The taxpayers would also bear an additional burden since the Defense Department would have to pay a higher percentage of the enterpriser's fixed costs. Additionally, the Treasury would receive no dividends from the enrichment enterprise and the effort and money already expended in pursuit of the promising AVLIS enrichment technology would be wasted.

DOE's Future Customers

The competitive market conditions which DOE faces surely have not been exaggerated. In 1988, a number of DOE's utility customers officially provided notification of termination for the years 1996, 1997 and 1998. That trend continued when the annual notices were filed at the beginning of this month. This illustrates that present contract holders are very concerned about the future ability of DOE to serve their individual needs and to offer competitive prices with such an unreasonably long lead time.

It has been argued that all of DOE's customers cannot cancel due to the lack of excess world-wide capacity to absorb the transferred demand. However, we must remember that this wave of cancellations is for commitments ten years into the future. Additional lower cost enrichment capacity to absorb customers leaving DOE ten years from now could easily be on line in time to meet the added demand. It is entirely possible that lower cost production of enrichment services could be achieved through the construction of a completely new and independent enrichment plant within the United States using European technology.

Amendment 6

In our review of Amendment 6, we have concerns about three provisions, namely those addressing the allocation of decontamination and decommissioning (D&D) costs, licensing requirements, and the federal tax status of the new corporation. We agree with Congress that an acceptable means must be provided to assure that sufficient funds exist in the future to perform D&D operations at the facilities used in DOE's enrichment program. We also agree that those who benefit from the operation of these facilities should provide the necessary funds. The utility industry considers it essential that D&D costs are allocated in a fair and reasonable manner between commercial (both domestic and foreign) and defense customers, and those costs should be included in the pricing of future enrichment services. We believe the historical use methodology provided in Amendment 6 would be an acceptable way to proceed.

In regard to the licensing provisions in Amendment 6, the industry agrees that any *new* enrichment facilities should be subject to appropriate licensing requirements of the Nuclear Regulatory Commission (NRC). However, to subject the *existing* enrichment facilities to NRC licensing requirements at this point in their useful lives will add significant costs to their operation, will adversely affect their ability to be competitive, and will provide *no* additional safety benefits. The existing facilities have operated safely for the past thirty to forty years and continue to be safely operated under DOE's supervision. Therefore, it is premature to require the new Corporation to embark upon a licensing process for these gaseous diffusion plants *until* the privatization feasibility study is completed, and Congress directs that licensing is required to accomplish complete privatization.

An issue which was not clearly resolved during the Senate's passage of comprehensive uranium legislation last year was the federal tax status of the restructured government corporation. Under the plain reading of the Internal Revenue Code (Section 501(c)), there is a very strong possibility that a Congressionally-chartered corporation, whether or not U.S. government-owned, will be subject to Federal income tax absent an *express* exemption contained in the legislation. We believe potential tax issues and uncertainties should be addressed in the legislative process, rather than being left to subsequent resolution by Internal Revenue Service audits, rulings or regulations. Therefore, Amendment 6 should include language which clearly exempts any restructured government enrichment corporation from the payment of both federal and state taxes.

Summary

While much time has been spent analyzing the history of the enrichment program and the manner in which the enterprise has been run over the past two decades, that history is less important than the need to restructure the enterprise so it can be a winner in the future. The time has come to look forward rather than backward and to set the stage to permit the domestic enterprise to remain a potent force in the world market. By operating as a competitively priced, market-based business, the enterprise would have the capability of growing instead of shrinking as well as providing cash to the U.S. Treasury in the form of dividends. Clearly, the enrichment enterprise does not need protection from foreign competition. Rather, *the need is for removal of the political and governmental constraints which currently hobble its competitive ability*.

EEI and ANEC encourage Congress to move quickly in its consideration of the proposed enrichment restructuring legislation. It has the potential to address many of the serious problems faced by the enrichment enterprise. Conversely, the wrong move on this restructuring legislation -- such as the establishment of a higher debt or unnecessary licensing requirements -- could cost electricity ratepayers billions of dollars. One of the amendments proposed for attachment to this legislation, namely Amendment 10, includes provisions unrelated to the welfare of domestic enrichment. In our opinion, that amendment, which addresses the revitalization of the uranium mining industry and the stabilization of mill tailings, would present the utility industry and electricity consumers with an excessive cost burden. However, we remain open to reasonable proposals to address uranium industry issues, and we will work with Congress to achieve a fair and equitable legislative package.

Senator **Ford**. Mr. Farley, you are mighty nice to come and give us a portion of your time to testify, and we are grateful for that.

I have a couple of questions, and then I will turn it over to Senator Heflin.

Do you believe that the value of the enrichment enterprise to the taxpayer is being preserved and/or enhanced when the new corporation proposed in my amendment is created?

Mr. **Farley**. We believe very strongly that the value to the taxpayer is greatly enhanced by the turnover to a corporation. We believe that for several reasons.

The first and most basic is that we believe the enterprise can then be competitive in the marketplace, and with that it can not only retain but recapture a good bit of the market that has been lost. With that, the costs of operation are spread over a much broader base and not only is there profit opportunity for a return on the investment or the equity, or whatever you wish to term it, that the Federal Government has and with dividend payments that could proceed from that.

But along with that is the fact that enrichment for the military, for the Department of Defense, could then have the overheads of the enrichment enterprise spread over a bigger base with resulting lower cost to the defense establishment. So, we feel it is a win-win situation for the taxpayer.

Senator **Ford**. And for the defense of this country.

Mr. **Farley**. Yes, sir.

Senator **Ford**. Even though it helps the taxpayers across the board, less cost to the Defense Department would be enhanced also.

Mr. **Farley**. Yes, sir.

Senator **Ford**. Mr. Farley, the utilities have notified the Department of Energy of cancellation of deliveries for the 1996 to 1999 time frame. Presumably—and that is all I can do—a utility would only do this if it believed that a reliable supply of enrichment services existed from some other source, a source that had some advantage over the Department of Energy, such as lower cost.

Some have indicated that our competitors do not have the capacity today and that they cannot build the capacity in the future to take a substantial portion of our business.

Would you characterize the future market for the enrichment services in terms of price, in terms of availability for the members of this committee?

Mr. **Farley**. Yes, I will be glad to give you my view on that. I think that, as you point out, there is no question but that a number of utilities have cancelled their long-term contracts with DOE.

Senator **Ford**. About 30 percent in recent years.

Mr. **Farley**. Yes, sir. That is my understanding.

Of course, in the procurement of fuel, there is always some risk of dealing with the marketplace whether it be coal or whether it be enriched uranium or uranium before enrichment. Whatever it is, there is always some risk and a market judgment must take place in that regard.

I think while our company has not terminated its contract and still retains a long-term contract with DOE, a number have terminated and we have, of course, considered it.

The fact is that circumstances have changed over the last few years. There is a market for enriched uranium. I am uncomfortable with a Russian entry into that, just as several of you have expressed this afternoon, but the fact is that there is a market out there of enrichment services. And a calculated judgment on the part of those who have cancelled their DOE contracts is based on the fact that they do believe that a source of enrichment is available to them out in that long-term time frame, 1996, 1997, 1998.

There is even discussion, which I am sure has come to the attention of this committee, that possibly the development of competitive enrichment operations may take place in this country with the use of European technology. And it may not be that long-term in being able to be developed.

I would say that the judgment of those utilities that have cancelled their contracts is that they will have enrichment facilities available to them. I think they have reviewed the marketplace very carefully and the alternate sources, including the potential, hopefully, that DOE would be more competitive at that point in time as well. So, I think the answer is that they feel within reason the comfort that they can do that and that enrichment services will be available to them at that point in time whether foreign or whether with new competing perhaps domestic enrichment or from DOE.

Senator FORD. Answer this question for me. I said I only had a couple of questions. I want to ask you a third one.

How would the foreign procedure of enriching uranium be imported to this country? Would that come with foreign funding, and how would that enterprise be licensed?

Mr. FARLEY. I can't give you the details on that. It is my understanding that the discussions that have taken place would relate to a foreign technology which would be developed primarily with American funding and with all necessary licensing, whatever that happens to be, taking place under the structure of existing law. It would have to be that way in my judgment.

But I think the funding would be largely that of a domestic source of funds with perhaps diversity through bond sales or with contract guarantees and things of that nature but with a technology developed and possibly a foreign contractor being the one to operate or at least to deliver the technology to the production process.

Senator FORD. Thank you very much, Mr. Farley. You have been very good, and I appreciate your patience.

Senator Heflin?

Senator HEFLIN. Thank you. We are delighted to see Mr. Farley here. He has been an outstanding citizen of the Nation and particularly of our State of Alabama.

Mr. Farley, in your opinion would America be better served today by setting up a wholly-owned uranium enrichment government corporation or by privatizing the uranium enrichment program?

Mr. FARLEY. Well, sir, I don't want to be caught in the middle between the sponsors of the legislation before us, which I fully support, and the administration which wants the ultimate privatization quickly because I think they are both on the right track.

I would say that it would seem to me appropriate that before a privatization should take place that there would need to be a government entity such as that proposed in Amendment 6 in place and operating at which time a judgment could be made first of all as to its viability and whether it can, in fact, be competitive there in the marketplace and have that value which I believe it would have and I believe many others think it would have. At that point, a decision on privatization I believe could be made in a more orderly method. I certainly think privatization has worked well in some other areas, but I would like personally to see the entity in place and doing what I think it can do, which is making money. At that point, the states could well be set for the next step.

Senator **Heflin**. In your testimony you mentioned after review of Amendment 6 of the Senate Bill 83, you had concerns and your industry has concerns over the three provisions, the allocation of decontamination and decommissioning costs. And you outlined that it is essential that these be allocated in a fair and reasonable manner between commercial, both foreign and domestic, and defense customers.

Do you have any formula or things by which we could approach that allocation?

Mr. **Farley**. Senator Heflin, the approach that I believe is contained in this bill, which is really more of a historic allocation cost, is a method of doing it that we find acceptable. There are other methods that we might find more acceptable in some respects that would cost us less.

But the main thing that we are concerned with is that as the bill progresses through the system of legislative process, that something at least like the historical relationship of who used the facilities be kept in place. And if that continues in place, we are comfortable with that. But we do not think in this instance or as may have come up in other instances in the past that the commercial customers ought to be burdened with more than their share of the pro rata costs as between the military and the commercial use. And that is that we are kind of I guess you would say on guard about that than we are concerned with the express language now in Amendment 6.

Senator **Heflin**. Sometimes there are so many indirect defense costs that I didn't know whether there might be some better formula or something to approach the allocation relative to the defense industry.

Mr. **Farley**. We can be satisfied with the language as it now stands in the bill. For example, the magnitude of the enrichment requirements for the military usage is more expensive than for the SWUs for the commercial users, and that additional expense and heavier use, so to speak, of the facilities is the kind of thing we feel ought to be represented in an allocation of costs. And as long as it is in that perspective, we are satisfied.

Senator **Heflin**. In regard to the tax exemption, is there any real argument that could be made or is that just a matter of an argument being made to making it taxable? Is that just something you think is a drafting error or overlooking?

Mr. **Farley**. No, sir. It is a complex subject, and I'm certainly not a tax counsel, as the Senator knows very well.

Senator **Heflin**. Well, you're pretty good. [Laughter.]

Mr. **Farley**. Thank you, Senator.

But the problem as we have perceived it—and I have discussed this with counsel more knowledgeable than I—is that to the extent that you don't have an express provision—and the 501(C) statute sets out all kind of individual entities that are there, and if you are not listed in that list of entities that is expressly excluded from the Internal Revenue Code applicability, then the question is raised are you thereby included because you weren't excluded. And our concern is that down the road, in the hands of IRS, that would remain an issue.

Now, I recognize that in the legislative process, it adds to the complexity if tax matters are brought up in legislation that is, for example, before this committee. And in the legislative process, though, on the floor or elsewhere, this might be handled with legislative history or otherwise.

We are uncomfortable, however, if the legislation went all the way through and nothing was ever said about it with something being said about exclusion from state taxes, but nothing about Federal, then I think we would have ultimately litigation and perhaps a serious contest by some future Internal Revenue Service who would be doing their job to look after what they perceived to be the appropriate interest.

Senator **Heflin**. Your company has an impressive record nationally and locally in operating your six nuclear units. If Congress takes immediate steps to restore the health of the DOE uranium enrichment program, will The Southern Company remain a loyal domestic customer of DOE?

Mr. **Farley**. We are now and we would like to continue to be. That is certainly our objective.

Senator **Heflin**. Thank you.

Senator **Ford**. Thank you, Senator Heflin.

And, Mr. Farley, we look forward to working with you and keeping you as a customer of the U.S.

Mr. **Farley**. Thank you, sir.

Senator **Ford**. Thank you for your testimony.

The next witness will be Dr. James E. Rushton, Director, Enrichment Business Services, Martin Marietta. Doctor, delighted to see you today. I appreciate your patience, and you may proceed with a statement. If you want to highlight it or put it on the record, it is your call.

STATEMENT OF DR. JAMES E. RUSHTON, DIRECTOR, ENRICHMENT BUSINESS SERVICES, MARTIN MARIETTA ENERGY SYSTEMS, INC.

Dr. **Rushton**. Thank you very much, Mr. Chairman.

It is a pleasure to appear before you today to discuss the restructuring of the uranium enrichment enterprise of the United States. With your permission, Mr. Chairman, I will submit an extended statement for the record.

Martin Marietta Corporation strongly supports the creation of a government corporation for uranium enrichment. Mr. Clyde Hopkins, the president of our company, was disappointed that he was unable to personally present our statement today. You are aware, Mr. Chairman, of his longstanding commitment to a vigorous and viable U.S. enrichment enterprise. Mr. Hopkins has provided testimony on two previous occasions in support of restructuring legislation.

Our remarks today will focus on three areas: first, the commercial benefits provided by the proposed legislation; second, the independent safety, health and environmental assurance established by your bill; and finally, the continued urgency in creating the United States Uranium Enrichment Corporation.

As you have stated already, over the past two years, over 30 percent of our domestic customers have notified DOE that they will be terminating their purchases in the 1996 to 1999 time frame. These utilities have not yet signed contracts with other suppliers to meet these demands, and this creates a large and growing uncommitted market in the late 1990s. Competition for this uncommitted market will continue to be fierce.

To meet this competitive threat and to assure the United States' continued strong presence in the enrichment marketplace, we believe the following actions by the enterprise are essential.

First, the enterprise must continue the excellent cost reduction efforts under way at our gaseous diffusion plants.

The enterprise must expand the use of low-cost, off-peak electricity at these plants.

The enterprise must improve the flexibility in the use of revenues so that we are able to match production with demand in future years, as you have discussed here.

We must also increase the marketing flexibility so that we become customer oriented. I think we can no longer talk about capturing market. In a competitive marketplace, the customer selects who his supplier will be. We have to be more customer oriented.

We must accelerate deployment of the AVLIS technology because this provides the long-term, low-cost base for a sustainable U.S. enterprise.

Martin Marietta is working actively on each of these actions and we have made progress on each despite the constraints of the current structure. Nonetheless, Martin Marietta believes that the creation of a government corporation, as specified in Senate Bill 83 with Amendment 6, will provide the commercial and financial structure necessary to be successful in the long run. We believe that the government corporation structure would enable a much more aggressive and a much more proactive approach to the critical actions that I listed above.

You have already spoken about one of the key commercial flexibilities that would be gained by this new legislation. The corporation would have the ability to issue debt and reuse its revenues. Because of the insufficient budget authority that we have in 1989, we are unable to fully utilize economical power available now. This means that marginal production costs will double in 1990 and we will be unable to take advantage of the lower cost now.

This is a multi-tens of million dollar lost opportunity for the enterprise, and it is just one example, the most recent example of how the annual budget cycle and the lack of borrowing constrains our ability to be more competitive.

The second commercial benefit that I would like to speak to relates to advanced technology. The U.S. is now the world's leader in the development of the atomic vapor laser isotope separation technology. As you know, other countries are also working on this technology. We believe the low cost potential of this process is outstanding and can provide a long-term basis for a competitive U.S. industry.

We recently recommended to DOE that the excellent technical status of the AVLIS program now warrants direction of that technology toward deployment. In our opinion a government corporation will more expeditiously deploy and has the potential to gain the full commercial advantage of AVLIS without the use of taxpayer funds. Financing could be done outside the appropriation process, and this will lead to much more timely deployment of this technology to meet market needs.

In addition to the commercial benefits that I have spoken to, the proposed legislation provides independent assurances for safety, health and environmental protection in the operation of our existing and future enrichment facilities. The proposed government corporation will be directly accountable to the EPA, to OSHA, to the NRC and to state regulatory agencies. This not only establishes the complete regulatory framework for eventual private ownership, it also assures that this business receives the independent oversight to continue to the full public confidence that we now enjoy.

Further, the enrichment legislation will provide a single point of responsibility and a funding mechanism for the eventual decontamination and decommissioning of the gaseous diffusions plants. The single point of accountability, coupled with the commercial focus of this new business, will assure the safe and efficient decommissioning of these plants. And this will result in lower cost for both defense and commercial customers.

Finally, we must reiterate the sense of urgency required to address these issues. The termination notices received by DOE represent over $1 billion of lost sales. The growing threat of competition and the recent termination notices are clear market signals that indicate the urgency for this restructuring.

If nothing is done to restructure the enterprise, future Congresses may be confronted with legislation to rescue rather than the restructure the business. Martin Marietta believes that with the proposed restructuring the enrichment enterprise can compete successfully in the world market. We urge the expedient passage of legislation to establish the United States Enrichment Corporation, and Martin Marietta remains available to support Congress and the Department of Energy in this endeavor.

[The prepared statement of Dr. Rushton follows:]

Statement of

Clyde C. Hopkins
President
and
James E. Rushton
Director, Enrichment Business Services
Martin Marietta Energy Systems, Inc.

Before the Senate Committee on Energy and Natural Resources
April 19, 1989

Mr. Chairman and Members of the Committee:

It is a pleasure to appear before you to discuss the United States uranium enrichment enterprise. For the reasons that I will discuss, Martin Marietta Corporation strongly supports the creation of a government corporation for uranium enrichment as a much-needed and appropriate step to promote the commercial viability of the enrichment enterprise. Mr. C. C. Hopkins, President of Martin Marietta Energy Systems, Incorporated, has responsibility for Energy Systems in its role as the management and operating contractor for the Department of Energy. Our contract includes the management of Oak Ridge National Laboratories, the Y-12 weapons complex, and all production and development activities at the three enrichment plants.

Martin Marietta has had the pleasure of providing testimony on the restructuring of the enrichment program to Congress on two previous occasions. In 1987, Mr. Hopkins appeared before this Committee to explain the institutional constraints of the enrichment enterprise under its current agency status and the alternative ways in which these problems could be addressed. In a written statement to the House Committee on Energy and Commerce in 1988, we focused our attention on the issue of outstanding financial obligations of the enterprise and the urgency in enacting legislation to establish the United States Enrichment Corporation with a sound fiscal future. Since then, a broad consensus has been reached on the need for restructuring of the enterprise. Our remarks today will focus on the commercial benefits and safety, health, and environmental assurance provided by the proposed legislation, and the continued urgency to create the United States Enrichment Corporation.

Uranium enrichment is an essential step in the commercial nuclear fuel cycle and in the supply of special nuclear materials for national defense purposes. For over 20 years, the Department of Energy and its predecessors have been a dependable supplier of enrichment services to electric utilities in the U.S. and around the world. Over this time, nuclear power has become a major source of electricity, providing nearly 20% of electric generation in the U.S., and even higher portions in many other countries. Until the late 1970s, DOE provided 100% of the noncommunist world's enrichment needs. In recent years, however, intense competition from European enrichers, combined with customers' concerns about the competitive ability of the Department of Energy's uranium enrichment activity, has resulted in a steady loss of market share. Today, we have just over 40 percent of the worldwide enrichment market, including almost $500 million in sales annually from foreign customers. The value of this activity in terms of national security, energy security, balance of trade, and American jobs requires a uranium enrichment business that is strong both structurally and financially.

The uranium enrichment activity is now at a crossroads. Over the past two years, over 30 percent of DOE's domestic customers have notified DOE that they will be terminating their purchases for the 1996 to 1999 time frame. These utilities have not yet signed contracts with other suppliers to meet these demands. This creates a large and growing uncommitted market for the mid-to-late 1990s. Competition for this uncommitted market is and will continue to be fierce. In addition to the European enrichers with whom we have competed over the past several years, there are other new participants entering the market. The Japanese have started construction on a commercial enrichment plant. One of our European competitors has been in discussions with major U.S. utilities and investors to build an enrichment plant in this country. And the U.S.S.R.'s marketing agent, Techsnab, is increasing its presence in the enriched uranium market, even in the United States.

To meet this competitive threat, and to assure the United States' continued strong presence in the enrichment marketplace, we believe the following actions by the enterprise are needed:

- Continued emphasis on the excellent cost-reduction efforts under way at our gaseous diffusion plants. These actions have been pivotal in allowing DOE to reduce its price by about 25 percent in recent years and offer a price that is competitive in today's market;

- Expanded use of low-cost, unfirm, spot-market electricity at the gaseous diffusion plants;

- Improved flexibility in the use of revenues for the gaseous diffusion plants to match production with demand. This area needs special emphasis since enriched uranium inventories have, as a matter of policy, been reduced in recent years, requiring production to meet all demands;

- Increased marketing flexibility to meet the special needs of each of our customers and create a sustainable competitive advantage for this country's enrichment enterprise.

- Accelerated deployment of the Atomic Vapor Laser Isotope Separation (AVLIS) technology to assure a low-cost production base.

Martin Marietta believes that the creation of a government corporation, as specified in S.83 with the enrichment amendment proposed by Senator Ford, and in the draft legislation of the DOE, will provide the commercial and financial structure necessary to best meet these challenges.

The proposed legislation will promote a competitive enterprise by removing many of the constraints inherent in its current agency structure. From a commercial perspective, the lack of a consistent mission results in frequent redefinition of the objectives of the enterprise. From a financial standpoint, DOE is subject to the annual budget process, is unable to retain and reuse its revenues or carry over annual appropriations, and is prohibited from borrowing funds. From a marketing perspective, the enterprise has limited flexibility to adapt to the marketplace and to tailor its services to individual customer preferences. From an operations perspective the financial constraints limit the ability to most effectively utilize the lower cost spot market for electricity. And from a management position, the enterprise suffers from diffuse responsibility and accountability and a short-term focus rather than a long-term strategic approach. All of these constraints, which are results of the federal agency structure, make it extremely difficult to operate as a commercial competitor.

Martin Marietta believes that the government corporation structure would enable a much more aggressive and proactive approach to the critical actions listed above.

The corporation's authority to issue debt and reuse revenues will improve the enterprise's ability to reduce costs. Currently, the reliance on the annual appropriations cycle impairs the enrichment enterprise's ability to manage its financial affairs in a business-like manner. As an example, the production from the Paducah and Portsmouth plants will nearly double from 6.4 million separative work units (SWU) in FY 1989 to 12.2 million SWU in FY 1990 because of insufficient budget authority in FY 1989 and depletion of inventories. Without supplemental funding in FY 1989, the enterprise is unable to fully utilize economical electric power available now which would result in marginal production costs that are one half (1/2) of those projected for FY 1990. This multi-million dollar lost opportunity is but one example of how the requirements of the annual budget cycle precludes the enterprise from operating in an efficient commercial manner.

Coupled with the constraint of an annual appropriation cycle is the enterprise's inability to borrow funds. As part of a federal agency, the enterprise currently is prohibited from issuing debt. In a commercial sense, this translates into financing by the owner, or equity financing. Very few successful businesses adhere to 100% equity financing; a balanced debt and equity approach provides the commercial flexibility to pursue profitable projects in a timely fashion. The debt and equity approach provided in the enrichment legislation would give the corporation the needed flexibility to pursue cost-effective projects and operate in a more efficient manner. The AVLIS program provides a prime example of the potential benefits of this flexibility. By financing outside the appropriations process, the Corporation will have an enhanced ability to adequately fund AVLIS construction on a timely basis to meet the market needs. Another example is the power procurement situation described above which could be resolved in a commercial manner by borrowing on a short-term basis the necessary funds to ensure the most cost-effective purchases of electricity.

Enhanced marketing effectiveness is another potential improvement created by the proposed legislation. As this Committee is aware, in April of 1988, 20% of the domestic customers of the enrichment enterprise terminated their purchases with DOE for deliveries after 1995. This past April 1, an additional 12% of domestic customers terminated with DOE. One of the prime reasons cited by these utilities for terminating their purchases with DOE is that they see other suppliers operating as predictable commercial entities with competitive prices and flexible contracts. Furthermore, these utilities are uncertain of the demands that future Congresses and Administrations may place on the existing enrichment program. The proposed legislation will provide the flexible pricing and contracting structure to market enrichment services in a dynamic environment while removing financial uncertainties. Restructuring the enrichment enterprise will send a clear signal to our customers, both foreign and domestic, that this country is committed to a viable and competitive enrichment program.

The U.S. enrichment enterprise is the world's leader in the development of the Atomic Vapor Laser Isotope Separation (AVLIS) technology. We believe the low-cost potential of this process is outstanding and can provide a long-term basis for a competitive U.S. industry. We recently recommended to DOE and the Congress that the stage of development readiness achieved by the AVLIS technology warrants direction of the program toward deployment. In our opinion, a government corporation will more expeditiously deploy, and has the potential to gain the best commercial advantage of, the AVLIS technology, without the use of taxpayer funds. Also, by deploying this technology most effectively, the national security interests of the U.S. will be enhanced by assuring a long-term, cost-effective supply of enriched fuel for naval propulsion and other programs.

In addition to the commercial benefits, we believe the proposed legislation provides independent assurances for safety, health, and environmental protection in the operation of enrichment facilities.

The proposed government corporation will be directly responsible to the EPA, OSHA, NRC, and state regulatory agencies for independent oversight. The national news media have recently focused attention on the potential environmental impacts of weapons production facilities owned by the Department. As the Committee is aware, the Portsmouth and Paducah gaseous diffusion plants, which would be transferred to the enrichment corporation in the proposed legislation, have comprehensive remedial action plans which have been developed in conjunction with the Environmental Protection Agency and the States of Ohio and Kentucky, respectively. As the Department's management and operating contractor, our company has taken a proactive role in working with DOE in successfully negotiating these agreements. Under the proposed legislation, the gaseous diffusion plants and new facilities would be licensed by the NRC, providing independent assurance of nuclear safety.

Further, the enrichment legislation will provide a single point of responsibility and a funding mechanism for the eventual decontamination and decommissioning (D&D) of the gaseous diffusion plants. Actual decontamination and decommissioning of the diffusion facilities is many years in the future, and the proposed legislation creates substantial incentive to develop procedures and methods which both meet evolving regulatory requirements and are economical for the relatively low hazard levels associated with shutdown gaseous diffusion facilities. The single point of accountability created in the legislation coupled with the commercial focus of the enrichment corporation, will assure the safe and efficient D&D of these plants, resulting in lower costs for both taxpayers and commercial customers. The separate fund also reduces the potential for delays as the decommissioning needs would otherwise compete with other DOE facilities for limited funds.

Finally, we must reiterate the sense of urgency required to address these issues. The termination notices received by DOE over the past two years represent a significant loss, valued at well over one billion dollars in sales from 1996 to 1999. Market share losses of this magnitude are only regained with difficulty. As you are aware, foreign enrichers have been in discussions with major U.S. utilities and investors to explore the feasibility of constructing a privately owned enrichment plant in this country. The uranium enrichment enterprise must be given the opportunity to protect the national interest by competing on an equal basis with foreign suppliers. The growing threat of competition and the recent termination notices are clear market signals that indicate the urgency for restructuring.

Martin Marietta believes that with the proposed restructuring, the U.S. uranium enrichment enterprise can compete, and compete successfully, in this world market.

In summary, the proposed government corporation will have the benefit of a commercial structure while remaining an instrumentality of the U.S. government to ensure proper accountability. The enrichment legislation provides the flexibility and commercial management structure needed by the enterprise to compete in today's enrichment marketplace, and, if properly implemented, offers a sustaining and revenue-producing investment for the U.S. government which could be sold to private industry to yield a significant financial benefit for the U.S. taxpayer. It also addresses the regulatory framework for the enterprise by providing direct accountability to federal and state regulatory authorities, and provides a funding mechanism to ensure the safe and efficient decontamination and decommissioning of the existing production facilities.

Martin Marietta is enthusiastic about the broad consensus supporting enrichment restructuring that has developed over the past several years within the Administration, Congress, the nuclear utility industry, and electric ratepayers. Although there is not yet a consensus on the means, there is agreement among all parties with the need for restructuring of the uranium enrichment enterprise. We urge the expedient passage of legislation to establish the United States Enrichment Corporation. Martin Marietta remains available to support Congress and the Department of Energy in this endeavor.

Senator **Ford**. Thank you very much, Doctor. We appreciate your coming today and testifying. We appreciate your patience also, if I might add that.

I have a couple of questions. I think we have gone over some of the questions, and your testimony has reassured us of the direction in which we are going.

Does Martin Marietta believe that the government's investment in the enrichment enterprise represents a debt by DOE to the Treasury? If not, should the taxpayers be entitled to a return on the investment of the enterprise? And does the amendment we are considering provide that return?

Dr. **Rushton**. We believe that the government corporation can provide a return on the investment in the assets now owned by the government. I think it is important to point out that under the government corporation, the assets are still owned by the government as they are today.

We do not believe that there is a debt in the normal sense of that word. And I think Mr. Farley has spoken to that matter already, and we would support his remarks.

The return to the Treasury we think is a very important matter. We think the magnitude of that return will be directly proportional to the success of this enrichment corporation. And your bill provides dividend payments to the Treasury that will come from the profits of this corporation. Obviously, a successful business will also have growing value because it will be worth more when it is eventually sold as a private business.

In addition, I think the D&D provisions, the decontamination fund provisions, remove a burden that is now on the taxpayer and shares that between the defense and the commercial customers of this enterprise. All of these things together I think will return value to the customers and will be, in essence, a package of returns on investments by the government.

Senator **Ford**. Doctor, as a private concern does Martin Marietta believe that the goal of every private business in the United States should be to maximize profit? If not, what is the goal?

Dr. **Rushton**. Well, sir, for our goal I think in Martin Marietta it is to have a continuing enterprise of growing value. This would apply to our corporation, to energy systems, and I think it also applies to the government corporation.

Value I think is measured for the government corporation in many different ways, not just financial. There are very strong national security interests at stake here. Energy security is very important, balance of trade is important, and in addition, a financial return to the taxpayers. But I think value should be looked at particularly for this enterprise in a much broader fashion.

Senator **Ford**. Then it is your belief that the language creating the corporation will enhance each of those areas as you see it.

Dr. **Rushton**. Absolutely.

Senator **Ford**. Doctor, I have no further—let me ask you one other question. Will the enrichment facilities be licensable by the NRC?

Dr. **Rushton**. It is our view that under the provisions of your bill, which would require that NRC develop regulations for licensing the gaseous diffusion plants as a material licensee, that is, under the so-called 10 C.F.R., part 40 and part 70 which your bill would set in motion, that these plants can be licensed. And we have done an assessment on this, and we believe we meet those license conditions today.

Senator FORD. I wanted to be sure. I almost forgot that one.

Thank you, Doctor. We appreciate it very much, and hopefully we will be working together a great deal more in the future.

Next is Charles H. Montange, National Taxpayers Union. He is accompanied by Jill Lancelot, Director, Congressional Affairs.

STATEMENT OF CHARLES H. MONTANGE, COUNSEL, NATIONAL TAXPAYERS UNION, ACCOMPANIED BY JILL LANCELOT, DIRECTOR, CONGRESSIONAL AFFAIRS

Mr. MONTANGE. Mr. Chairman, my name is Charles Montange. I compliment you on a very correct pronunciation of it.

Senator FORD. Well, at least we agree on something, don't we? [Laughter.]

Mr. MONTANGE. We actually may agree on quite a bit.

With me today is Jill Lancelot, Congressional Affairs Director of NTU. I serve as their counsel on this issue, and I am testifying today on behalf of them.

NTU is a not-for-profit public interest organization representing some 200,000 members interested in limiting taxes and wasteful spending. NTU strongly supports the elimination of unwarranted subsidies to mature industries.

Before I launch into my prepared remarks, I would like to comment briefly on some points that arose in the testimony and in the questions and answers that preceded me in order to get these squarely into the record.

Questions were raised specifically about future demand for enrichment services and concerns were expressed about cancellation by U.S. utilities of enrichment contracts. Some 30 percent of U.S. utilities it was stated have cancelled effective 1996, 1997, 1998, in that time frame. Roughly eight to 10 years from now they are cancelling their commitments to take enrichment services from DOE.

Mr. Farley from Alabama Power I think correctly stated that that is a situation that poses business risks not just to DOE but to the utilities involved.

And I would like to note for the record a report which I actually received over the weekend or was able to review over the weekend which we received recently from the Department of Energy. It is by the Nuclear Assurance Corporation dated March 1989.

In a section at page 16 entitled "Enrichment in the 1990s" it states:

> The enrichment market is very competitive today and will likely remain so through the 1990s because of the large amounts of excess capacity in buyer-held inventories that can be sold. In the late 1990s, the market will tighten significantly as inventories are liquidated and needs are required to be filled from the three primary suppliers. Although a shortage of enrichment supply is unlikely, it is very likely that market prices will increase significantly because of the demand for a significant portion of the three primary suppliers' capacity and their need to at least recover marginal costs.

Now, one of the three primary suppliers, of course, is the Department of Energy.

I would note further that they indicate in the report that the Eurodif-COGEMA operation which is one of the primary suppliers will be operating very close to its capacity with commitments to date.

Similarly, Urenco is currently not planning to expand without firm sales commitments, and the NAC, the company that put out this report, estimates that without additional sales in the U.S., Urenco will not exceed sales of about where they're at or somewhat more.

Further, I would note that it suggests here that DOE will be actually operating at capacity of its current GD plants, and it states that expansions by Urenco or DOE through AVLIS would be the only meaningful additions that would add to the capacity.

In short, we face a potentially——

Senator FORD. You might add the Soviet Union to that too.

Mr. MONTANGE. They indicate that even with complete reliance on all available capacity likely to be achieved from both the Soviet Union and China, the DOE will be operating at capacity, sir.

Senator FORD. I beg to disagree with you and I want that in the record.

Mr. MONTANGE. Well, I am only reading you what the NAS said.

Senator FORD. I don't want to get into an argument with you, and I'm not going to. You wanted to get it on the record. You have been making notes over there for an hour and a half based on the witnesses in front of you. We have your basic statement here. We either follow the statement or something, and then we'll get through. But you're making statements, and I am making a statement for the record also.

Mr. MONTANGE. Sure.

A question was raised about Urenco's plans to build capacity. I would note that Urenco has in a response to a question which was posed by the National Taxpayers Union Foundation—we asked them specifically what their plans were to build additional capacity to serve here in the U.S. And I might note in preface, that they have asked us to state that it is their policy——

Senator FORD. Mr. Montange, let me just make a statement to you. I'm sitting here with my fingers crossed that we won't have to cut this hearing off because of votes in the Senate. And if you want to make your observations after you make your statement, I'll be glad to take those. So, why don't we just get into your principal statement. You give us then your observations after that, and we will proceed. And that is what the other witnesses have done.

Mr. MONTANGE. Fine, as the Senator wishes.

The Department of Energy's civilian uranium enrichment program has been a fiscal disaster. When the program was set up under the Private Ownership Act of 1964, Congress specifically provided that it was supposed to price so as to recover its costs. This requirement is embodied in section 161v of the Atomic Energy Act. That has consistently been interpreted by DOE's predecessor, the Atomic Energy Commission, as well as by the Joint Committee on Atomic Energy, to require that prices be charged such that all costs, including imputed interest on the government or taxpayer investment in the assets of the program and depreciation of those assets would be recovered within a 10-year period.

It turns out that DOE has not recovered costs as required by law. To the contrary, billions of dollars of costs have not been recovered. The General Accounting Office's most recent estimate, which is now two years old, indicated that unrecovered costs totaled about $8.8 billion. The amount has grown since then due to additional imputed interest.

Further, the DOE program has yet to recover any money for the estimated billion dollar plus decommissioning and environmental remedial action effort for its three existing uranium enrichment plants. One is already shut down permanently we are told. The agency says that the other two will soon be obsolete.

More specifically, there have been millions of net appropriations over the years to the program. While some of this has now been recovered in the most recent past, at the same time the program has amassed this billion dollar plus unfunded decommissioning liability. Testimony today from DOE indicated that the decommissioning liability is approximately $3 billion. In essence, the program has not recovered all of its operating expenses, much less returned anything to the Treasury for any of the taxpayer assets transferred to the program.

DOE's to this headache has been to aggravate the problem. In 1984 the DOE issued new uranium enrichment contracts that drastically cut the prices the agency charged its civilian customers. The new contracts also purported to guarantee a very low ceiling price. These low price guarantees, as GAO with the concurrence of a U.S. district court has indicated, are unlawful under the full cost recovery requirement of section 161v of the Atomic Energy Act.

DOE, nonetheless, claims that the ultra vires contracts lock the agency into its present business condition. That condition is somewhat dismal. It has been and evidently can only be characterized as one of erosion of the value of the enterprise to taxpayers and at the same time destruction of the enterprise for the future.

Two business consultants described it in the following terms to this committee two years ago. Senator Ford asked the question. "Which strategy most nearly approaches the one that DOE is pursuing?"

Mr. Tyre, the vice president of Booz Allen, the consultant to Martin Marietta, responded, "We would have to characterize it as a harvest strategy."

Senator Ford said, "Explain the harvest strategy."

Mr. Tyre said:

> Harvest means grab the money while you can and to not worry about the long term viability of the business; actually, to milk the business.
>
> The current approach, as we understand it, is a milk the business approach in that investments are not being made to develop a low cost approach or technology in the future.
>
> It is an interesting combination, actually, of that plus not maximizing the price but reducing the price.
>
> So, it is kind of a poorly executed harvest strategy.

Mr. Diamond, another vice president of Booz Allen then inserted:

> In a well executed harvest strategy, the enterprise would hold prices up while not investing and maximize returns to the Treasury.
>
> What DOE is doing is reducing prices to hold customers, but not offering the customers a long term viable business.

So DOE is both reducing the value of the enterprise and it is not investing in its future.

Now, DOE's customers were and are locked into contracts through some period into the mid-1990s after which date DOE will face competition, although as indicated in the NAC study that I indicated, that the question of how severe that competition will be is somewhat up in the air. Any reasonable business would price its product to maximize profits before the date when it will really be hit competition. DOE is not. DOE claims that it had to reduce its prices to operate in a businesslike fashion.

But we feel this claim is seriously misleading. First, for a variety of reasons the agency has retained considerable market power which is an ability to make its prices stick. And the real threat to the agency as the Booz Allen consultants testified would not arise until the latter 1990s, roughly still about eight to 10 years off.

In short, since the utility services' contracts were issued in 1984, the U.S. taxpayer has been and continues to be facing enormous losses for in our view no sound reason. Again, it is not a dream that we come up with, but we are basing this upon information that has been put out by consultants to the nuclear industry and consultants to the enrichment contractor that is operating the facilities for the Department of Energy.

DOE's 1984 contract, which is doing all this is aptly named in our opinion. DOE calls it the utility services enrichment contract. The contract certainly doesn't seem to be serving an identifiable taxpayer interest.

S. 83 and Amendment 6, which is what this hearing is about, would not in our view as presently constituted remedy or improve upon this current situation. They do not equip the enrichment enterprise to maximize profit or value or to minimize losses incurred by taxpayers, nor do they direct the agency to so behave. Additionally, they do not give it any incentives to act as a business in the interest of its owners to the U.S. taxpayer.

We note that S. 83 and Amendment 6 repeal the full cost recovery requirement of current law. That deprives taxpayers of even the nominal protection from being forced to subsidize the enrichment program which that provision of law is supposed to represent. By repealing Section 161v, S. 83 and Amendment 6 essentially codify into law DOE's currently unlawful utility services enrichment contracts under which the agency is unable to maximize profit or value or to minimize losses.

Let us be absolutely clear on the net effect of this aspect. The proposed legislation largely guarantees that the Federal uranium enrichment program will continue on its present course of a poorly executed harvest strategy. As long as the enrichment program is bound to loss provoking ceiling price guarantees, it cannot behave as a business during that period that it is so bound. It cannot maximize profit. Indeed, it cannot even minimize losses.

The proposed legislation also writes off essentially all the more than $8.8 billion in unrecovered costs to date. We note that the government has already asserted authority to write those down. Their figure on their 1987 DOE report lists still $3 billion in government investment. That is uranium in the stockpile and then undepreciated and unwritten off government assets in the enrichment plants.

Further, although S. 83 and Amendment 6 set up a decommissioning fund, which we heartily endorse, they do not require any specific payments to the fund, nor do they provide any sureties actually to recover these decommissioning costs. Most other nuclear elements of the nuclear fuel cycle do provide or are required to provide by law or by their PUC some kind of reserve to assure that decommissioning costs will be recovered. In short, taxpayers are essentially stripped of protection under the proposed legislation and they are afforded no effective substitute protection.

Besides not equipping the Federal enrichment enterprise to act in the interest of taxpayers, the bill does not direct the enrichment program to maximize profits or value or to minimize losses. The key pricing provision, section 1508, as well as the purposes in the finding sections of the bill, speak in very general terms, including to assure energy security, language that would encompass just about anything that the administration or the agency or the corporation would seek to accomplish during the course of managing the thing.

Respectfully, this language is ambiguous enough to let the agency to do whatever it wants, including failing to recover yet more of its costs. Moreover, to the extent that it does afford any protection to taxpayers' interests, it is largely unenforceable. To give teeth to a measure allegedly protecting taxpayers, must specifically provide that taxpayers like any other stakeholder in an enterprise can sue to enforce the protective provisions.

Besides neither equipping nor directing the new agency to protect taxpayers' interest, the proposed legislation provides no incentives to protect the interests. As noted, there is no enforcement mechanism for any provision which allegedly safeguards taxpayers in this bill.

Further, the bill purports to set up a corporation, but this is largely semantics. As the bill indicates, the corporation is really a "agency and instrumentality of the United States'. It has no board of directors. We certainly endorse the view of the administration that there ought to be a board. Its managers under the proposed legislation get no incentives for maximizing profits or value or minimizing losses. The new creation is about the same, as we see it, as the current DOE setup except that the management will be paid on a higher pay scale and probably have less oversight. This is the kind of business as usual approach. It is not terribly adequate in our regard given this program's past history and poor results.

In addition to these basic problems, we note several additional flaws in the bill. For example, it authorizes the new entity to borrow $2.5 billion on the open market. Although this allegedly will not bind the United States, citing section 1507(a)(4) of the bill, the entity is an agency of the United States. Its authorizing statute proposes to say that it is acting in the interest of U.S. national security and energy security. It is hard to imagine that the United States will not stand behind or regard itself as bound by the obligations of this new enterprise. This $2.5 billion first mortgage authority on the part of the new entity not only puts taxpayers at risk for this additional amount, but also puts that much more money between taxpayers and any recovery of their investment.

We think there are alternatives to this, and this is where I think we can perhaps talk in some term of agreement.

There has been a lot of testimony this afternoon about the desirability of creating an entity which can maximize value for taxpayers. That is really all we want. We would like to see something where that is its principal, primary and controlling objective.

We would also like to see an organization which actually contributes to that objective. We have a number of ideas to do that. We think the administration does too.

We haven't had an opportunity yet to review their bill. There may be elements in there that can be readily incorporated into the draft that has been prepared by the committee that we would find totally acceptable. We may have a few modifications that we would seek to present ourselves. We are quite willing to talk about possibilities that would result in a mechanism which would assure that in fact the civilian uranium enrichment program of the United States operates to maximize value for its owners, the taxpayer.

Perhaps ultimately this entity could be privatized, but at least while it is in government hands, it is not going to be subsidized. Ultimately NTU would like to see the enrichment enterprise privatized. That may be the only means to fully protect the U.S. taxpayer from continued risks and demands for further subsidies. But at the same time, we do not want to see it simply given away or dribbled away per the current poorly executed harvest strategy. And those words are Booz Allen's.

We are eager to work with the committee and we urge the committee to adopt legislation responding to a need to put this organization on a sound footing. We disagree somewhat on some of the rationales presented for why legislation is necessary. We do agree with the ultimate goal, that this thing should be set up to, in the words of Martin Marietta this afternoon, maximize the value of the corporation.

Thank you.

[The prepared statement of Mr. Montange follows:]

HEARING
before the
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
of the
COMMITTEE ON ENERGY AND NATURAL RESOURCES
of the
UNITED STATES SENATE

April 19, 1989

TESTIMONY ON BEHALF OF NATIONAL TAXPAYERS UNION
by Charles H. Montange

Senate Legislation to Restructure the Department of Energy's Uranium Enrichment Enterprise: S. 83 and Amendment No. 6

Mr. Chairman and Members, my name is Charles Montange. I serve as counsel to National Taxpayers Union (NTU), and I am testifying today on behalf of that organization. NTU is a not for profit, public interest organization, representing 200,000 members, interested in limiting taxes and wasteful spending. NTU strongly supports the elimination of unwarranted subsidies to mature industries.

DOE's civilian uranium enrichment program is and continues to be, a disaster for U.S. taxpayers.

The Department of Energy's (DOE's) civilian uranium enrichment program has been a fiscal disaster. When the program was set up under the Private Ownership Act of 1964, Congress specifically provided that it was supposed to price so as to recover its costs. This requirement, which is embodied in section 161v. of the Atomic Energy Act, 42 U.S.C. § 2201v., was consistently interpreted by DOE's predecessor, the Atomic Energy Commission, as well as by the Joint Committee on Atomic Energy to require that prices be charged such that all costs, including imputed interest on the taxpayer investment in the assets of the program, and depreciation of those assets, would be recovered within a 10 year period.

It turns out that DOE has not recovered costs as required by law. To the contrary, billions of dollars of costs have not been recovered. The General Accounting Office's most recent estimate, which is now two year's old, indicated that unrecovered costs totalled around $ 8.8 billion.[1] The amount has grown since then due to additional imputed interest. Further, the DOE program has yet to recover any money for the estimated billion dollar plus decommissioning and environmental remedial action effort for its three existing uranium enrichment plants. Yet one is already shut down, and the agency says the other two will soon be obsolete. More specifically, there have been millions in net appropriations to the program, while at the same time the program has amassed a billion-dollar-plus unfunded decommissioning liability. In essence, the program has not even recovered all its operating expenses, much less returned anything to the Treasury for all the taxpayer assets transferred to the program.

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[1] E.g., Statement of Keith Fultz (GAO), before the Energy & Power Subcomm. of the House Energy and Commerce Comm., released April 8, 1987, at p. 1. DOE has admitted that unrecovered costs

DOE's response to this fiscal headache has been to aggravate the problem. In 1984, DOE issued new uranium enrichment contracts that drastically cut the prices the agency charged to its civilian customers. The new contracts also purported to "guarantee" a very low "ceiling price." These low price guarantees are (as GAO, with the concurrence of a U.S. district court, has indicated[2]) are patently unlawful under the full cost recovery requirement of section 161v. of the Atomic Energy Act.[3] DOE nonetheless claims that the ultra vires contracts lock the agency into its present business condition.[4] What is this condition? It is dismal. It has been, and evidently can only be, characterized as one of erosion of the value of the enterprise to taxpayers and, at the same time, destruction of the enterprise for the future. Perhaps a worse case of mismanagement could be imagined, but this one will certainly do for now. Two business consultants described it in the following terms to this

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stood at $ 7.5 billion at the end of September, 1985. See 51 Fed. Reg. 3624 (Jan. 29, 1986).

[2] See Western Nuclear v. Huffman, D. Colo. 84-C-2315, Amended Order filed September 19, 1985. This Order was vacated for a determination of the standing of the plaintiff uranium producers to challenge the DOE uranium enrichment contracts. The case was dismissed by the plaintiffs without a determination of standing.

[3] DOE has purported to "write-off" a large portion of its unrecovered costs. E.g., OMB, Major Policy Initiatives 88 (1986) (write-off to about $ 3.5 billion); 51 Fed. Reg. 3629 (Jan.29, 1986). GAO says that the write-off is also beyond DOE's authority. E.g., Letter, Comptroller General to the Honorable John Dingell, Dec. 27, 1984; Letter, Comptroller General to the Honorable Edward J. Markey, Feb. 19, 1986.

[4] The only "lock-in" is political. An unlawful contract is not enforceable.

Committee two years ago:[5]

> Senator Ford: Which strategy most nearly approaches the one that [DOE] is pursuing?
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> Mr. Tyre [Vice President, Booz, Allen]: We would have to characterize it as a harvest strategy.
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> ....
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> Senator Ford: Explain the harvest strategy. ....
>
> Mr. Tyre: Harvest means grab the money while your can, and do not worry about the long term viability of the business; actually, to milk the business.
>
> The current approach, as we understand it, is a milk the business approach in that investments are not being made to develop a low cost approach or technology in the future.
>
> It is an interesting combination, actually, of that plus not maximizing the price but reducing the price.
>
> So it is sort of a poorly executed harvest strategy.
>
> Mr. Diamond [Vice President, Booz, Allen]: In a well executed harvest strategy, the enterprise would hold prices up while not investing and maximize returns to the treasury.
>
> What [DOE is] doing is reducing prices to hold customers, but not offering the customers a long term viable business.
>
> So [DOE is] both reducing the value of the enterprise and [it is] not investing in its future.

As the Booz, Allen witnesses testified, DOE customers were and are locked into contracts through 1995, after which date DOE will face competition.[6] Any reasonable business would price to maximize profit before that date. DOE is not. DOE claims that it had to reduce its prices to operate in a business-like fashion. But this claim is seriously misleading. First, DOE for a variety of reasons retains considerable market power (i.e., the ability to make its prices stick).[7] Further, the real threat to

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[5] Restructuring the Department of Energy's Uranium Enrichment Program, Hearings before the Energy Research and Dev. Subcomm. of the Senate Energy and Natural Resources Comm., 100th Cong., 1st Sess. 187 (1987).

[6] Id. at 185.

[7] Rather than go into this point in detail, we will note simply the words of DOE's principal European competitor, COGEMA (for Eurodif): "COGEMA, Inc. does not intend to, nor could we, take a large bite of DOE's enrichment cake. We have both

DOE, as the Booz-Allen consultants testified, would not arise until 1996. In short, since the "utility services contracts" were issued in 1984, the U.S. taxpayer has been, and continues to be, facing enormous losses for no sound reason.[8]

DOE's 1984 contract -- which is doing all this to us -- is aptly named. DOE calls it the "utility services enrichment contract." That contract certainly is not serving any identifiable taxpayer interest.

S.83 and Amendment No. 6: Recognizing a problem but going in the wrong direction.

S. 83 and Amendment No. 6, if adopted, would not improve on the current situation. They do not equip the enrichment enterprise to maximize profit or minimize losses incurred by taxpayers, nor do they direct the agency to so behave. Additionally, they do not give it any incentives to act as a business in the interest of its owners -- the U.S. taxpayer.

S. 83 and Amendment No. 6 repeal the full cost recovery requirement of current law. It deprives taxpayers of even nominal protection from being forced to subsidize the enrichment program. By repealing section 161v., S. 83 and Amendment No. 6 essentially codify into law DOE's currently unlawful "utility services enrichment contracts" under which the agency is unable to maximize profit or to minimize losses. Let us be absolutely clear on the net effect of this aspect of S.83/Amendment No. 6: it largely guarantees that the federal uranium enrichment program will continue on its present course of a "poorly executed harvest strategy." As long as the enrichment program is bound to loss-provoking ceiling price guarantees, it cannot behave as a

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physical limitations (notably available capacity) and commercial limitations that make such a threat unrealistic." F. Bujon, (COGEMA), "Welcome to the Business World" at 9 (AIF Fuel Cycle Conference 1986).

[8] This is all the more appalling in light of DOE statements that its foreign competitors are charging far more than DOE on their home markets.

NTU also notes that DOE, under congressional pressure, has been making substantial investments in new technology (known as AVLIS). However, recent DOE estimates indicate that DOE can produce enrichment at the existing enrichment plants as cheaply if not more cheaply than it can using AVLIS technology, which in any event has not yet been shown to work at the scale required. NTU is concerned that the taxpayers' investment in this new AVLIS technology will be wasted, literally or functionally, just as was over $ 2 billion of investment in the enrichment program's aborted gas centrifuge enrichment facility.

business -- it cannot maximize profit. Indeed, it cannot even minimize taxpayer losses. The proposed legislation also writes off essentially all the more than $ 8.8 billion in unrecovered costs to date. Further, although S.83/Amendment No. 6 sets up a decommissioning fund, it requires no payments and provides for not sureties actually to cover decommissioning costs. Indeed, the bill provides no legally enforceable mechanism to assure that the taxpayers will not be stuck with all or at least the vast bulk of decommissioning costs. In short, taxpayers are essentially stripped of protection under the proposed legislation, and they are afforded no effective substitute protection at all.

Besides not equipping the federal enrichment enterprise to act in the interest of taxpayers, the bill does not direct the enrichment program to maximize profits or to minimize losses. The key pricing provision -- section 1508 --speaks only in terms of recovering costs "over the long term" and "generating profits consistent with the maintenance of the Corporation as a continuing, commercial enterprise and other purposes of this title." Respectfully, this language is ambiguous enough to let the agency do whatever it wants, including failing to recover yet more of its costs. Moreover, to the extent that it does afford any protection to taxpayer interests, it is unenforceable. To give teeth to a measure allegedly protecting taxpayers, Congress must specifically provide that taxpayers, like any other stakeholder, can sue to enforce the protective provisions.

Besides neither equipping nor directing the new agency to protect taxpayers' interests, the proposed legislation provides no incentives to protect taxpayers' interests. As noted, there is no enforcement mechanism for any provision which allegedly safeguards taxpayers in this bill. In addition, there is no provision for independent audits or GAO oversight. Further, the bill purports to set up a "corporation" but this is simply semantics. As the bill indicates (Amendment No. 6, § 1203), the "corporation" is really an "agency and instrumentality of the United States." It has no board of directors. Its managers get no incentives for maximizing profits or minimizing losses. This new creation is about the same as the current DOE set-up, except that the management will be paid on a higher pay scale and have less oversight. But this "business as usual" approach is hardly adequate in view of this program's past history and poor results.

In addition to these basic problems, we note several additional flaws in the bill. For example, it authorizes this new entity to borrow $ 2.5 billion on the open market. Although this allegedly will not bind the United States (Amendment No. 6, § 1507(a)(4)), this new entity is an agency of the United States, and its authorizing statute (Amendment No. 6, § 1101) says in essence that it is acting in the interest of U.S. national security and energy security. It is hard to imagine that the

United States will not stand behind, or regard itself as bound, by the obligations of this "enterprise." This $ 2.5 billion "first mortgage" authority on the part of this new entity not only puts taxpayers at risk for this additional amount, but also puts that much more money between taxpayers and any recovery of their investment.

There are alternatives.

There are alternatives to the "business as usual" approach of DOE, which S.83/Amendment No. 6 largely embodies.

The federal enrichment enterprise should be reorganized so that it will operate as a for-profit business and not as a subsidy program or some sort of scam. First, it should be given an absolutely clear direction to maximize profits, period. Maximization of profits is, after all, the hallmark of what a business is all about in our society. Second, the enterprise should be responsible to a board of directors and otherwise organized like a real business corporation. Third, the managers should be given incentives to make money for the owners of the enterprise -- the U.S. taxpayer -- and not to follow a de facto strategy of playing off one congressional committee against another. Fourth, taxpayers should be given standing to sue to assure enforcement of these and other protective provisions which are required.

If the federal enrichment enterprise is indeed "essential" for energy security as is claimed in S. 83/Amendment No. 6, then its customers -- and not the U.S. taxpayer -- should pay something for this security. Either the ultra vires 1984 utility services enrichment contracts with their unlawfully low prices should be renegotiated and prices charged so as to minimize taxpayer losses, or Congress should assess a fee on DOE customers adequate to recover DOE costs as provided under existing law. The price or fee should also be adequate to assure recovery of decommissioning costs.

Ultimately, NTU wants to see the enrichment enterprise privatized. That may be the only means to protect the U.S. taxpayer from continued risks and demands for further subsidies. However, at the same time, NTU does not want to see the enrichment enterprise simply "given away," or "dribbled away" per the current "poorly executed harvest strategy."

For the reasons stated above, NTU opposes S.83/Amendment No. 6. We pledge our support for efforts to revitalize the federal enrichment program so that it truly can and does function as a profit-maximizing business entity. The program should not be employed simply as an imprudent conduit for unwarranted subsidies by the U.S. taxpayer to foreign and domestic electric utilities and to government contractors.

Reservations on proposed Amendment No. 10.

NTU understands that the Committee intends to hold hearings in the near future on Amendment No. 10, which envisions a billion dollar tax on nuclear utilities and a charge of some $ 450 million against the new federal enrichment entity, basically for payment over to the domestic uranium industry. NTU has many grave concerns with proposed Amendment No. 10. In combination, Amendments 6 and 10 are tantamount to the Senate's nuclear fuel bill in the last Congress -- S.2097 -- which NTU vigorously and successfully opposed. We are prepared to discuss our objections to Amendment No. 10 in the appropriate forum.

A word on putting a bona fide enrichment program together.

The problems with the current DOE program, and with many of the "solutions" proposed, are the product of special interest group bargaining. Each interest group -- the government contractors, the nuclear utilities, the uranium companies-- lobbies hard for benefits at the expense of the general taxpayer. The result is inevitably gross economic distortions and inefficiencies, heavier burdens for the general taxpayer, and a soaring deficit: particular interest groups essentially seek to make out like bandits at taxpayer expense with no reasonable return, and even a loss, for society as a whole. It is, in the word of a recent presidential commission, "irrational."[9] George Melloan, writing in the Wall Street Journal on February 14 of this year, carried the argument one step farther. He argued that the results of subsidization not only hurt society as a whole, but also the industries which were allegedly being helped. "[W]hen the subsidies create severe market distortions and begin to breakdown, someone has to come up with real money." Federal subsidy, he noted, "destroy[s] market discipline." It thereby kills industries which would otherwise prosper. "The power to subsidize involves the power to destroy."

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[9] See "Economic Public Policy" in Privatization: Toward More Effective Government, Report of the President's Commission on Privatization 233-34 (March 1988): "A political system of interest-group bargaining will almost certainly result in very large inefficiencies by society in the use of its available resources. For example, each interest group will face the following incentive: If government can be pressured to provide greater goods and services for that particular group, the full benefits will flow to the group. Yet, the costs are likely to be much smaller, because the burden of taxation to pay for the benefits will be spread over the full body of taxpayers. Each interest group will typically have a strong incentive to demand as much in goods and services from government as it can get. ... [Under this regime,] government would tend toward ever-growing budget deficits. ... [B]oth the absolute magnitude and the distribution of goods and services provided by government [under this regime] are likely to be irrational."

Trying to contain this problem is vital not only to protect the federal taxpayer but also to maintain a vigorous, dynamic and growing nuclear fuel industry in the U.S. capable of meeting our needs and providing employment opportunities. In other words, what we advocate here today is, ultimately, a solution friendly to the interests of consumers and workers as well as the general federal taxpayer.

Thank you for this opportunity to testify.

Senator **Ford**. You are pretty good at shifting gears, Mr. Montange. I am pleased to hear that.

We have now been notified that in four minutes we begin to vote. So, that will prevent me from getting into any kind of a colloquy with you.

But I think there are some areas where we might reach an agreement. Your testimony, of course, is very critical of the legislation. Toward the end of your statement there when you went off of your written statement and started talking, you said there were some areas on which we might agree and you would be willing to talk about it, and value, and you began to say a little bit different than you were in your written testimony.

But in spite of that, I believe that we share some goals. I am not interested in subsidizing anyone with taxpayers' money. We want the uranium enrichment enterprise to be a strong business that can make money for the taxpayers. It seems that you and I can agree upon that.

You want to privatize the uranium enrichment ultimately. Perhaps we don't entirely agree about that, but we can't privatize an economically sick enterprise. No one will buy it. We need to restore the long-term strength of the enrichment business or there is just no point in talking about privatization I suspect.

And ensuring the future of the enterprise is an important goal that goes hand in hand with making money. And I think you and I can agree upon that.

You want the enrichment enterprise to start planning for the decontamination and decommissioning of its facilities. I want that too. One of the most important enrichment facilities is in my state. When the time comes to decommission that facility, I want the money to be there. I see you shaking your head.

Mr. **Montange**. I sure do.

Senator **Ford**. In our legislation we set out for the first time—for the first time—the authority for a program to fund decontamination and decommissioning. And I think we agree on that goal in this legislation.

Mr. **Montange**. Senator Ford, if I might just interject, I think that there are many avenues that we should be able to explore where we could work out a mutually compatible package. Many of the goals that you are seeking to achieve we share. To a large extent we differ on some of the methodology which we think is essential to assure that what we both want to have happen actually happens.

Senator **Ford**. Well, I think with that statement and that air of friendship, we shall call this hearing recessed. And we have another hearing. We will recess until tomorrow.

[Whereupon, at 3:54 p.m., the hearing was recessed, to reconvene, Thursday, April 20, 1989.]

THE NEED FOR URANIUM ENRICHMENT ENTERPRISE RESTRUCTURING AND URANIUM MINING REVITALIZATION

THURSDAY, APRIL 20, 1989

U.S. SENATE,
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:04 p.m. in room SD-366, Dirksen Senate Office Building, Hon. Wendell H. Ford, presiding.

OPENING STATEMENT OF HON. WENDELL H. FORD, U.S. SENATOR FROM KENTUCKY

Senator FORD. Good afternoon, ladies and gentlemen. I apologize for being late, but I have not been able to clone myself yet. I had another 2 o'clock appointment and had to get that one behind me.

This is a continuation of yesterday's hearings for the Committee on Energy and Natural Resources and its Subcommittee on Energy Research and Development. It is a continuation of a hearing on S. 83 and proposed Amendment No. 6, which is uranium enrichment.

Our first witness today is Mr. Alan Dean, Fellow, National Academy of Public Administration. He will be accompanied by Dr. Harold Seidman. Mr. Dean, if you want to highlight your statement, it would be fine.

STATEMENT OF ALAN L. DEAN, FELLOW, NATIONAL ACADEMY OF PUBLIC ADMINISTRATION, ACCOMPANIED BY DR. HAROLD SEIDMAN, FELLOW, NAPA

Mr. DEAN. Fine, Mr. Chairman. What I shall do is read a few of the highlighted paragraphs, and, with your permission, skip a few, knowing that they will be fully incorporated in the record.

Senator FORD. They certainly will, and I appreciate your accommodation, Mr. Dean.

Mr. DEAN. My name is Alan Dean. I am currently the chairman of the National Academy of Public Administration's panel on executive organization and management. I have also served as chairman of the National Academy as assistant secretary of transportation and as deputy assistant director for management of the Office of Management and Budget. I have been the vice president of a government corporation, namely, the United States Railway Association, and I have been involved in numerous Academy studies of public enterprises, including the area of uranium enrichment.

I am accompanied on my right by Dr. Harold Seidman, who testified before this committee on May 4, 1987, on the organization of the uranium enrichment program. Dr. Seidman is also a Fellow of the Academy and the former assistant director for management and organization of the Bureau of the Budget. While in the Bureau, Dr. Seidman was responsible for implementing the Government Corporation Control Act of 1945. He has an international reputation as an expert on government enterprises, and, Mr. Chairman, we all regard him as the guru in this field.

Senator FORD. Well, we are always glad to have a guru and I would like to see one here once in a while. We hear about them but we do not see very many and I am delighted he is here.

Mr. DEAN. I should like to mention that the National Academy of Public Administration is a non-partisan organization formed to advance effectiveness of public management at all levels of government. In 1984, the Academy was chartered by an act of Congress and charged with providing advice on issues of organization and management such as those now before this committee.

But I wish to stress that the views presented by Dr. Seidman and myself in this testimony are our own and do not represent formal positions of the National Academy as an institution. In fact, it does not take formal positions as an institution. They are, however, that is, our views are consistent with the advice provided by past NAPA panels, including that set forth in NAPA's report on government corporations issued in August 1981.

The government corporation has evolved as a pragmatic response to the need to devise an institution capable of administering effectively new types of government programs, the first of which were undertaken in World War I and have since been greatly expanded. Among the novel activities assumed by the government in response to wars, economic crises and other developments have been a number of commercial enterprises involved with the generation and sale of electric power, the operation of passenger railroads, the operation of maintenance of waterways, and a large number of lending and insurance programs.

These public enterprises have had certain unique characteristics which clearly distinguish them from traditional government functions which do not involve a buyer-seller relationship. Namely, the government was dealing with the public as an entrepreneur rather than as a sovereign. Secondly, users, rather than the general taxpayer, were expected to pay the cost, and expenditures and revenues necessarily fluctuated with consumer demand and flexibility was essential if such enterprises were to be able to respond to the dictates of the market.

Very briefly, Mr. Chairman, the experience of these kinds of entities soon demonstrated that we needed something called a government corporation. And the Congress in 1945 officially recognized this with the enactment of the Government Corporation Control Act. And, since then, numerous entities have been chartered under that act, and I think we can say almost without exception they have provided improved management over what traditional government structures have been able to do.

I should stress, however, that the Government Corporation Control Act is not a general incorporation law. There is no comprehensive federal law dealing with the powers, organization and structure and legal status of government corporations. A government corporation only has those powers and authorities which the Congress sees fit to place in that corporation in the enacting charter. And that is why the legislation before this committee is so important today. It, not the Government Corporation Control Act, will set forth the powers, structure and functions of the corporation.

There is no doubt in our minds that the Department of Energy's uranium enrichment program fully meets the prescribed criteria for the use of a government corporation. Yet, the program has in the past been denied the operating and financial flexibility accorded federal business enterprises organized as government corporations, and, consequently, has been seriously handicapped in maintaining the United States' competitive position in world markets.

Bringing the program under those systems of government financing, budgeting and accounting and auditing designed for comparable government enterprises would make possible substantial improvements in current performance, and, at the same time, provide for more effective accountability to the Congress.

We are now today, Mr. Chairman, encouraged that the prospects appear bright for the establishment of the long-overdue uranium enrichment corporation. Not only did the Senate approve similar legislation during the 100th Congress, but the President's 1990 budget also supports the corporation concept, and, as you heard yesterday, we finally have an administration bill and administration endorsement. All of these factors would appear to suggest that we can have this long-overdue corporation if the reorganization does not become entangled with other issues.

Mr. Chairman, we do have a few specific comments, however, that we think might improve the bill and the proposed amendment before this committee, although, first I wish to stress that our general assessment is the proposed Amendment No. 6 is, on the whole, well-drafted and provides an excellent basis for a corporation charter. The second comment is that, while we favor wholly-owned corporations being under the direction of a single administrator appointed by the President and confirmed by the Senate, we are concerned by the complete divorcement of the corporation from the Secretary of Energy.

Free-standing corporations often have difficulty carrying on their functions without the support and general supervision of the appropriate departmental secretary. We urge that the Secretary of Energy be assigned a general supervisory role subject to the scope and limitations so well set forth in Section 1501 of S. 2097 as passed by the Senate last year. You could just keep that language up.

Third, there is no practical purpose served by a wholly-owned government corporation issuing capital stock. The corporation is clearly a part of the executive branch of the United States, and the usual purposes of issuing equity shares in the private sector do not apply here. On the other hand, if the Congress wishes the stock to exist as a basis for paying dividends into miscellaneous receipts, the existence of the capital stock as described in Amendment No. 6 will not adversely affect the functioning of the corporation. It would, however, be inappropriate to permit sale of the stock because this could result in private control of a government agency.

Fourth, Section 1507 of the proposed amendment authorizes the uranium enrichment corporation to incur indebtedness in an amount not exceeded $2.5 billion at any one time. We suggest that the corporation be authorized or required to utilize the Federal Financing Bank in securing funds through debt transactions.

The FFB would have no control over the decisions with respect to the need to raise funds, but would assure lower interest rates and integration with other U.S. governmental debt actions. The corporation could also avoid the considerable expense of developing internal expertise, employing bond counsel, paying underwriting fees, all of which it would have to do if it floated its own securities in the private market.

I would like to make a fifth point which does not appear, Mr. Chairman, in our written testimony. Namely, Section 115 appearing near the end of the amendment, which provides that, for the 1990 fiscal year, "total expenditures of the corporation shall not exceed total receipts" should be deleted in its entirety.

This is not appropriate for a government corporation and, in a business-type operation, it is difficult to assure on a year-by-year basis a balance of revenues of outlays. Also, it imposes cash accounting on an entity which should keep its accounts on an accrual basis. That Section 115 would do no good for the Congress and only handicap the corporation.

Let me now add a word about the prospects for the ultimate privatization of the government's uranium enrichment program. My comments here are based in part on my involvement as vice president of the United States Railway Association and the organization of Conrail, which functioned for several years as a government-owned corporation. The proposed language set forth in section 1608 of Amendment 6 is excellent, providing as it does for a five-year period of corporation operations before the feasibility of a transfer to private ownership is considered. Moreover, an act of Congress would be required before any privatization could take place.

The point that I wish to make is that eventual privatization will depend on more than a desire to move this activity to the private sector. The government corporation will first have to demonstrate, as Conrail had to do, that it can enrich and sell uranium at a profit. Care should be taken in enacting this legislation to avoid imposing on the corporation such a heavy indebtedness or other impediments. That is to preclude its achievement of a bonafide profit when judged by commercial standards.

This completes our statement, Mr. Chairman. We would be pleased to respond to any questions which members of the committee may wish to address Dr. Seidman or myself and, possibly, with your permission, Dr. Seidman might wish to supplement my statement.

[The prepared statement of Mr. Dean follows:]

STATEMENT OF
ALAN L. DEAN, FELLOW

NATIONAL ACADEMY OF PUBLIC ADMINISTRATION

Before the

SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
of the
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

on

S. 83 AND PROPOSED AMENDMENT NO. 6 TO ESTABLISH A WHOLLY-OWNED GOVERNMENT CORPORATION TO MANAGE THE NATION'S URANIUM ENRICHMENT ENTERPRISE

April 20, 1989

Mr. Chairman and Members of the Committee:

My name is Alan L. Dean. I am currently the Chairman of the National Academy of Public Administration's Panel on Executive Organization and Management. I have also served as Chairman of the National Academy, as Assistant Secretary of Transportation and as Deputy Assistant Director for Management of the Office of Management and Budget. I have been the vice president of a government corporation, the United States Railway Association and have been involved in numerous Academy studies of public enterprises, including uranium enrichment.

I am accompanied by Dr. Harold Seidman who testified before this Committee on May 4, 1987, on the organization of the uranium enrichment program. Dr. Seidman is also a Fellow of the Academy and is a former Assistant Director for Management and Organization of the Bureau of the Budget. While in the Bureau of the Budget, Dr. Seidman was responsible for implementing the Government Corporation Control Act of 1945. He has an international reputation as an expert on government enterprises.

The National Academy of Public Administration is a nonpartisan organization formed in 1967 to advance the effectiveness of public management at all levels of government. In 1984 the Academy was chartered by Act of Congress and charged with providing advice on issues of organization and management such as those now before this Committee.

The views presented by Dr. Seidman and myself in this testimony are our own and do not represent formal positions of the National Academy as an institution. They are, however, consistent with the advice provided by past NAPA panels, including that set forth in its Report on Government Corporations issued in August 1981.

The government corporation has evolved as a pragmatic response to the need to devise an institution capable of administering effectively new types of government programs first undertaken in World War I and since greatly expanded. Among the novel activities assumed by the government in response to wars, economic crises and other developments has been a number of commercial enterprises involved with the generation and sale of electric power, the operation of passenger railroads, the operation and maintenance of waterways and a large number of lending and insurance programs. These public enterprises had certain unique characteristics which clearly distinguished them from traditional government functions which do not involve a buyer-seller relationship, namely (1) the government was dealing with the public as an entrepreneur rather than as a sovereign; (2) users, rather than the general taxpayer, were expected to pay the cost of goods and services; and (3) expenditures and revenues necessarily fluctuated with consumer demand and flexibility was essential if such enterprises were to be able to respond to the dictates of the market.

Experience soon demonstrated that enterprises with such characteristics could not function effectively under administrative and financial control systems designed for totally different types of government activities. Government enterprises could not be expected to operate as businesses and respond to market forces if their expenditures were limited to amounts provided by annual appropriations and all revenues had to be turned over to the Treasury. Governmental accounting and auditing systems had the limited purposes of preventing the over-obligation of appropriated funds and unlawful expenditures, and they did not provide the information necessary to establish rates and prices, determine income, expenses, and profit or loss, and evaluate results. Governmental accounting, for example, did not normally include such costs as depreciation and interest on the government's investment, and accounts were maintained on a cash rather than an accrual basis. Furthermore, traditional government agencies were often hamstrung by a myriad of regulatory and prescriptive statutes in areas such as purchasing, sale of goods and property, and the management of their personnel.

When it enacted the Government Corporation Control Act of 1945 (31 U.S.C. 9101 et seq.), Congress recognized the need for both a special type of government institution tailored to the requirements of business programs and special types of controls over such institutions which would assure accountability to Congress and the President without impairing essential flexibility. Congress expressly noted that "the corporate form loses much of its peculiar value without reasonable autonomy in its day-to-day decisions and operations."

Under the provisions of the Government Corporation Control Act, wholly-owned government corporations are required to submit an annual "business-type" budget to the President and Congress and are subject to a "commercial-type" audit by the Comptroller General. Congress is authorized to limit the use of corporate funds for any purpose, but it has rarely chosen to do so, except for administrative expenses. In reviewing business-type budgets, Congress has before it information on both revenues and expenditures.

The Control Act also directed that any government corporation chartered under the laws of the District of Columbia, a state or a territory be liquidated and that in the future no corporation be created or acquired for the purpose of acting as an agency and instrumentality of the United States, except pursuant to an act of Congress specifically authorizing such action.

The Government Corporation Control Act is not a general incorporation law. There is no comprehensive federal law dealing with the powers, organization structure, and legal status of government corporations. Corporations possess only those powers which Congress sees fit to include in their enabling acts. In its 1981 report to the Office of Management and Budget on government corporations, a National Academy of Public Administration panel recommended that such corporations generally be given the power to sue and be sued in their corporate name; to retain and utilize revenues; to determine the character and necessity of expenditures and manner in which incurred, allowed and paid, subject only to laws specifically applicable to government corporations; and to enter into contracts and acquire and dispose of property. Comparable provisions are normally to be found in corporation charters. Corporations also may be given authority to borrow from the Treasury, the Federal Financing Bank or the public. They may also be exempted from some or all of the civil service laws and other prescriptive statutes applicable to conventional agencies.

It should be emphasized that government corporations are organized to achieve a public purpose authorized by law. Incorporation does not cause an agency to lose its public character. The Supreme Court, in the case of Cherry Cotton Mills vs. U.S. (327 U.S. 536 !1945], held that Congress' choice to call the Reconstruction Finance Corporation a corporation "... does not alter its characteristics so as to make it something other than what it actually is, an agency selected by the government to accomplish purely governmental purposes." The government corporation is thus a government agency. It simply constitutes a different way of carrying on the public's business.

The wholly-owned government corporation should not be confused with mixed-ownership government corporations and so-called government-sponsored enterprises, such as the Synthetic Fuels Corporation, which are defined in law as not being agencies or instrumentalities of the United States. Mixed-ownership corporations and government-sponsored enterprises, because of their ambiguous legal status, present serious problems of accountability. Fortunately, the amendment now being considered by this Committee contemplates, as it should, a wholly-owned government corporation.

The government corporation has been adopted throughout the world as the most effective form or organization for public enterprises. President Truman prescribed the criteria for the use of government corporations in his 1948 budget message when he stated:

> Experience indicates that the corporate form of organization is peculiarly adapted to the administration of government programs which are predominantly of a commercial character -- those which are revenue producing, are at least potentially self-sustaining, and involve a large number of business-type transactions with the public.

These criteria were reaffirmed by the first Hoover Commission and remain valid today.

There is no doubt that the Department of Energy's uranium enrichment program fully meets the prescribed criteria for use of a government corporation. Yet the program has been denied the operating and financial flexibility accorded federal business enterprises organized as government corporations and consequently has been seriously handicapped in maintaining the United States' competitive position in the world markets. Bringing the program under those systems of government financing, budgeting, accounting and auditing designed for comparable government enterprises would make possible substantial improvements in current performance and at the same time provide for more effective accountability to Congress.

The program is now compelled to maintain two systems of accounts -- one for developing budgetary information for Congress and the other for developing business-type financial statements. The program is financed by an annual appropriation and revenues are paid into the Treasury. Arbitrary budgetary limitations deprive the program of the flexibility essential for making sound and realistic business decisions. Unless the program is restructured to provide appropriate operating and financial flexibility, it is doubtful that it will be able to maintain its present market position and demonstrate its future viability.

We are encouraged that the prospects now appear bright for the establishment of the long-overdue Uranium Enrichment Corporation. Not only did the Senate approve similar legislation during the 100th Congress, but the President's 1990 budget also supports the corporation concept. If the reorganization can avoid becoming entangled with issues unrelated to the need for a corporation, we can see no reason why the legislation before your Committee should not quickly become the law of the land.

We do have a few specific comments and suggestions bearing on proposed Amendment No. 6.

First, the amendment is, in general, well drafted and provides the basis for an excellent corporation charter.

Second, while we favor wholly-owned corporations being under the direction of a single administrator appointed by the President and confirmed by the Senate, we are concerned by the complete divorcement of the corporation from the Secretary of the Energy. Free-standing corporations often have difficulty carrying out their functions without the support and general supervision of the appropriate departmental secretary. We urge that the Secretary of Energy be assigned a general supervisory role subject to the scope and limitations so well set forth in section 1501 of S. 2097, as passed by the Senate last year.

Third, there is no practical purpose served by a wholly-owned government corporation issuing capital stock. The corporation is clearly a part of the Executive Branch of the United States and the usual purposes of issuing equity shares in the private sector do not apply here. On the other hand, if the Congress wishes the stock to exist as a basis for paying dividends into miscellaneous receipts, the existence of the capital stock as described in Amendment No. 6 will not adversely affect the functioning of the corporation. It would, however, be inappropriate to permit sale of the stock because this could result in private control of a government agency.

Fourth, section 1507 of the proposed amendment authorizes the Uranium Enrichment Corporation to incur indebtedness in an amount not exceeding $2,500,000,000 at any one time. We suggest that the corporation be authorized or required to utilize the Federal Financing Bank in securing funds through debt transactions. The FFB would have no control over the decisions with respect to the need to raise funds, but it would assure lower interest rates and integration with other U.S. government debt actions. The corporation could also avoid the considerable expense of developing internal expertise, employing bond counsel, and paying underwriting fees -- all of which it would have to do if it floated its own securities in the private markets.

I would like to add a few words about the prospects for the ultimate privatization of the government's uranium enrichment program. My comments are based in part on my involvement as vice president of the U.S. Railway Association in the organization of Conrail, which functioned for several years as a government-owned corporation.

The proposed language set forth in section 1608 of Amendment No. 6 is excellent, providing, as it does, for a five-year period of corporate operations before the feasibility of a transfer to private ownership is considered. Moreover, an act of Congress would be required before any privatization could take place.

The point that I wish to make is that eventual privatization will depend on more than a desire to move this activity to the private sector. The government corporation will first have to demonstrate, as Conrail had to show, that it can enrich and sell uranium at a profit. Care should be taken in enacting this legislation to avoid imposing on the corporation such a heavy indebtedness or such other impediments as to preclude its achievement of a bona fide profit when judged by commercial standards.

This completes our statement. We would be pleased to respond to any questions which members of the Committee may wish to address to Dr. Seidman or me.

Senator **Ford**. I would be very pleased to have the doctor do that, if you would care to, Doctor.

STATEMENT OF DR. HAROLD SEIDMAN, FELLOW, NATIONAL ACADEMY OF PUBLIC ADMINISTRATION

Dr. **Seidman**. I think Mr. Dean has thoroughly covered almost all of the issues. I would just stress two of them. One that relates to borrowing through the treasury or the Federal Financing Bank as opposed to going to the market. This is an issue on which I was asked to testify this week before the Ways and Means Committee. It is an issue that has come up in connection with the savings and loan legislation.

It is a very high-cost method of financing for the United States government to go directly into the market. The cost ranges from about 25 to 40 basis points, and, when you are getting up into the billions of dollars, it is a great deal of money for which we get no return.

You have to add on to that the cost of underwriting fees, bond counsel and everything else, and I do not know what we gain by it. I think one of the implicit assumptions that this would facilitate privatization, if they were required to go into the market, the market would create a discipline.

I would point out to you that these bonds will be marketed as government bonds competing with treasury issues. That is where they are treated in the market, whether they are federal financing bank treasury or government agency issues are all, as far as the financial community are concerned, are government issues, except you pay a higher interest rate. So I do not think that would be an obstacle——

Senator **Ford**. Doctor, let me, at this point, if you would allow me, and Mr. Dean, that provision was placed in this legislation last time at the request of OMB. You all know that well. And one of the reasons that they cited was the discipline that would be placed upon this corporation, where inside might not lend itself to public scrutiny as well if we went to the FFB.

Mr. **Dean**. Mr. Chairman, as a fugitive from OMB, a former OMB official, I have high respect, usually, for its views. I do not think that particular point has great validity. The United States Railway Association relied wholly on the Federal Financing Bank. I was vice president for administration of that corporation. I saw no dimunition in accountability or any other adverse effect, but it was simpler for us. We saved a lot of positions, and we got our money at lower interest rates.

Dr. **Seidman**. The issue of market discipline, it does not provide market discipline because, on the issues by a government corporation, as far as the financial community is concerned, the U.S. government stands in back of it; it is a moral obligation. And they are marketable even when secured by assets representing institutions with negative net worth, as they have been in the savings and loan area.

It has not provided any market discipline because they assume that they are backed by the United States. It is a fiction, and this would be confirmed by consultation with any of the banking houses on Wall Street. If you look at the morning paper, they are listed as government issues.

Senator **Ford**. One of the things that is there, though, is that we specify it will not be backed by the federal government.

Dr. **Seidman**. But they do not take that seriously. In each instance that language appears; as in the case of the foreign credit banks and others, the assumption by the financial community is nonetheless, despite that language, the government is going to stand behind it, and it is usually backed up by borrowing authority which the government corporation has is looked upon, in effect, as a form of government guarantee for the securities that they issue.

Senator **Ford**. On Section 115, that is a budget problem here, Mr. Dean, as it relates to ours, and that was placed there just for one year so that we could resolve any budget problems that we might have. It lasts for one year and that is the end of it. But we did that for a purpose, and, as you understand, there are purposes for lots of things, and, good or bad, but this would have to be a purpose that would be included.

I might say that I am very pleased that the Chairman of the full committee has joined us, Senator Johnston, and I would be very pleased to have an opening statement or whatever, Senator, that you would like to have a few more questions for this panel, a couple of more questions, but I would be glad to have you at this point.

The **Chairman**. Mr. Chairman, thank you very much. I had an opening statement which I think we put into the record yesterday.

Senator **Ford**. And we enjoyed that.

STATEMENT OF HON. J. BENNETT JOHNSTON, U.S. SENATOR FROM LOUISIANA

The **Chairman**. I would simply like to observe that we need to pass this legislation. Our present legislation was designed at a time when DOE had a monopoly on uranium enrichment. It no longer does; there is real competition out there in the world. If we adopt a harvest strategy, as we are urged to by some, then we will soon be out of business and we will not make very much money for the taxpayer.

It seems to me that this is a good approach. We may find some ways to improve it along the way, but we have got to design this as a viable competitor in the marketplace, and it is difficult to do so because we have got to have some government involvement in this. I mean, in my view, I do not think you can have pure private enterprise in this regard.

But I think this bill is a pretty good approach. I say "pretty good" because nothing is perfect; we come from a history that, an egg that cannot be unscrambled. But I think it is a good approach and it will clearly revitalize the DOE enrichment program and put it on a stronger footing than it is now.

And I reiterate that you and I, acting together with other members of this committee, intend to pass this legislation this year, and I think we will. I think its time has come this year. I think we would have passed it last year. Well, we did, in fact, pass the

Senate; I think we would have passed both Houses had it not been for the mining and Canadian trade agreement involved in this.

Senator **Ford**. And somewhat late in getting it through.

The **Chairman**. And somewhat late in getting it through. But I think those problems, I think we should not deal with mining this time, even though I would like to and supported that last time. But I think that we ought to limit this to enrichment, because I just do not know how you get past the Canadian trade agreement, for one thing, for the main thing, and the House felt that way last year.

So, I hope we will pass this expeditiously, Mr. Chairman, and I congratulate you on the good job you have done last year in the last Congress and in this Congress.

Senator **Ford**. Thank you, Mr. Chairman. I am encouraged, as Mr. Dean said, that we have stayed with this procedure and we have seen the need for a long time. Now, I think, we are finding both the Congress, particularly the Senate, and the administration basically on the same track, and hopefully we can do what Senator Johnston said and that is to get it passed. And I believe if we pass it, the President will sign it.

Let me ask you this. Some have mentioned the idea that the new corporation might establish an equity partnership in future capital projects. Would this be buying a piece of the government or would it be akin to the mixed ownership corporation? And would you discuss some of the pitfalls of mixed ownership?

Mr. **Dean**. I was going to say, Mr. Chairman, I will yield to the guru here who has really gone into this subject in depth.

Dr. **Seidman**. There are two levels here that you are dealing with, whether you have mixed ownership, the uranium enrichment corporation. A previous occasion when I testified before Congress I said all of the mixed ownership corporations demanded the four freedoms which were: freedom from accountability to the Congress, freedom from direction of the President, freedom from the budget, and freedom of access to the treasury.

You have a situation that can play both sides. They are private when they want to; it dilutes accountability. And I think the general experience with mixed ownership corporations is not one to encourage you to use this as a device.

This, however, should not debar the uranium enrichment corporation entering into arrangements with others under contractual arrangements with private entities in conducting specific types of activities, under contractual arrangements where you have private equity and control, which is quite different than having mixed ownership of a government corporation, which is called in law a "mixed ownership government corporation," which I find rather a contradiction in terms.

So, I think there are two levels here. I would say there are, I would urge against having a mixed ownership of the corporation, which has been talked about. That is why I was concerned about the concept of selling stock, if there was stock in the corporation, because that would end up with the kind of problem we have with government-sponsored enterprises today, which is becoming a major problem. I think the experience there, most of those are really, they fit into the mixed-ownership category. But this should not be seen as a bar for the corporation itself entering into partnership arrangements and equity and joint ventures with private capitals for specific activities undertaken by the corporation.

Senator **Ford**. Thank you. I have one final question and then Senator Johnston may have some others. Yesterday, in the testimony we received from the National Taxpayers Union suggested that the new corporation would be no different, and I underscore "no different," than business as usual for the enrichment program.

And I want you, you think you have done it basically, but I want you to narrow it down for me, do you believe that establishing a government corporation will enhance the competitiveness of the enterprise and ultimately its value to the taxpayer?

Mr. **Dean**. Our answer is unequivocally "yes." This creates, would create, a genuinely commercial environment with the management flexibility to function as a corporation. Without that, we have seen the damage already done, to the management of our uranium enrichment program. We feel it is absolutely essential and we think the history in the United States where revenue-producing activities have been converted to government corporations supports it.

Senator **Ford**. Well, we listened to Deputy Secretary Moore yesterday when he talked about how we had, the process we had to go through to get a little more money to make additional money. And, by the time we went through this process, the opportunity was gone or the price was so high that it doubled. And we need the ability to move and move with dispatch with good judgment.

Mr. **Dean**. Precisely, particularly with the authority to incur debt at the option of the corporation, within the limitation and the ability to use its revenues, the ability to make decisions on expenditures within its general business plan. Those are things badly needed if uranium enrichment is to be effectively performed.

Now, the problem is there is only one other alternative, and that is pure privatization. But there is no way one can privatize this program at the present time. There are such technical things as, it would take the Nuclear Regulatory Commission four to five years to crank up to be able to regulate it. So, when you consider these factors plus the fact that the private sector will never buy a corporation until it proves that it can make a profit, we have got to take this route and operate this way for at least five years.

Senator **Ford**. It was obvious yesterday in testimony it would take at least that long, and at the end of that period, the possibility NRC would be in a position to license it and those things were necessary.

And, in that period of time, we have become competitive again or moved in that direction; we are finding even the Russians now in a position to be very, very competitive with us on a direct basis. And that makes some of us cringe just a little bit, Mr. Dean.

Dr. **Seidman**. Senator Ford, on the question of taxpayers, I think we have direct experience with this. It is not "business as usual." It is very different when an agency is operating out of its revenues rather than out of appropriated money. Once money has been appropriated, there is no particular inducement for anybody to save money. They spend the appropriation.

We saw the circumstances, to give one example, with the old Panama Canal. I used to maintain a system where you could not buy anything in the big department store they ran; you had to get coupons, and this cost several hundred thousand dollars a year. We said, "Why do you do this?" The day they became a corporation, they stopped doing it. They regularly got that appropriation. Nobody questioned it; there was no inducement to cut that out until it involved spending their own revenues for it.

So, once you have the pressure of dealing with the market, of living out of your revenues, then you were in circumstances which certainly you are going to operate differently than they are today.

Senator **FORD**. That brings on its own discipline is what you are saying, rather than something else.

Dr. **SEIDMAN**. That is exactly right.

Senator **FORD**. Senator Johnston, do you have any questions you would like to ask of our two witnesses?

The **CHAIRMAN**. Yes, I would like the opinion of our witnesses on the pricing strategy as set forth in our bill and what you think of it.

Mr. **DEAN**. The pricing strategy, to us, is primarily a policy question. As long as a pricing strategy contemplated by the legislation permits the corporation to adjust prices so it can, in fact, meet its revenue requirements, operate on at least a self-sustaining, and, preferably, a profit-making basis, we would have no particular comment on it.

The **CHAIRMAN**. Do you think our language achieves that?

Dr. **SEIDMAN**. I think the only comment which relates to this gets into the elements of cost that you include, because that gets into the rate structure. And this gets into questions which relate to how much debt you are going to impose on it, which is—I have always had a problem when I have testified before this committee before; I do not think a loss is a debt. A loss is something that normally is assumed by the equity holder, which happens to be the United States Government.

So I found this argument, which I found about the give-away and the debt dealing with mythology; it is not a debt. Now, it can be a policy question of how much you want to have that the corporation should return, which becomes a policy question for determination by the Congress. But, the point is, is that I think the language is clear that this is to be a self-sustaining enterprise operating under a reasonable profit covering its cost, which is set forth. I think that is a correct pricing formula for a government corporation.

But it is very important that, in approaching this, we set up the corporation on an economically viable basis. You can set it up in such a way that it could never cover its costs. This is a corporate reorganization, and it would not serve either the interests of the taxpayer or the government to set up corporations so burdened with costs that it could not function effectively. There is no inducement to be efficient if you are guaranteed to operate at a loss.

Mr. **DEAN**. This point is particularly important because there is some view around that this corporation ought to pay to the treasury of the United States some tremendous amount of money coming out of past, alleged indebtedness. But a government corporation can only function if it can price its product competitively. And if burdens are placed on this corporation—and we do not think they would be now—which would make it impossible for the corporation to compete, you defeat the purposes of the legislation.

The **Chairman**. Well, I think there are those who say that you ought to prohibit the purchase of uranium from anybody but this corporation.

Dr. **Seidman**. That is what I have seen. I think that is wrong. I would rather see the competition get it. This is a competitive industry. Now, it can make it profitable by shutting out the competition. I do not think that is an approach I would advocate.

The **Chairman**. That is really just another tax, is it not?

Dr. **Seidman**. That is right.

The **Chairman**. It would violate George Bush's pledge, do you think?

Mr. **Dean**. We would say this, that nuclear energy in the private sector is in deep enough trouble without having additional costs being imposed on it.

The **Chairman**. Well, Darman talks about a, what looks like a tax and quacks like a tax and now, if you have a set of laws that price something in excess of the market value, is that not really a tax?

Dr. **Seidman**. Yes, sir, it is. It is a tax. It is the same way as, getting back to where I was, where you require by law, where you mandate that people have to invest in a government corporation, that is not private investment, that is a tax. As it was done, when you say you are mandated, you are assessed so much and you will get stock whether you want it or not. That is not, to me, private investment. That is a tax.

The **Chairman**. So, if you were representing, let's say, the National Taxpayers Union, and we tried to put in such a law to prevent the purchase of this from anyone else so that we can run up the price artificially, you would object, would you not?

Mr. **Dean**. We would object and we would also say one other thing to this committee. This legislation has an excellent chance to pass if it stays what it is now, an important reorganization proposal. The more semi-taxes, labor protection, protection of the uranium industry, and other type provisions that begin to appear, the less chance there is of maintaining the unanimity of support, which I think this proposal, in its present form, now enjoys, as you have pointed out. It now, at long last, has clear administration support as well as most persons who are reasonably knowledgeable in government organizations.

The **Chairman**. One final question. One issue with the administration is whether we ought to have a board of directors, as they suggest, or an administrator, as we have in the bill. What is your preference?

Mr. **Dean**. First we have to recognize there are two kinds of corporations organizationally, those that fit under a cabinet secretary and those that are free-standing.

As you have heard from our testimony, we prefer attaching corporations to cabinet secretaries. When that is done, it is very awkward to have the secretary work through other than a single administrator. Now, it is possible to have an advisory board, and many corporations have such entities. But they are not in the command chain.

Now, if the corporation is wholly free-standing, there the pros and cons are more evenly divided, and Dr. Seidman and I have talked about this many times. The Postal Service, which is a corporation in all but name, has a board of governors, because no one else can think of a way to appoint the Postmaster General and set the policies other than through that board. You can argue whether or not it has been a successful experiment. But we also have Amtrak and the Tennessee Valley Authority, major free-standing corporations, all of which have boards of directors.

So our general advice would be, attach this corporation some way to the Energy Department and have a single administrator. If you do, however, in the Congress, want to keep it free-standing—and that is the will of the Congress—then it is kind of a toss-up whether you want a board or a single administrator with an advisory committee.

Dr. SEIDMAN. Well, you have to recognize that a board of directors of a government corporation such as this does not serve the same purpose as that of a board of directors of a private corporation. The reason you have a board of directors of a corporation in the private sector is that you have diversity of ownership. The board of directors represents the shareholder.

The CHAIRMAN. Except when you get to S&Ls.

Dr. SEIDMAN. That is right. But that is at least the principle, the reason why you have, you actually, in the private sector, you also have things called corporation sole, s-o-l-e, not s-o-u-l. I sometimes have that come out a different way when it is transcribed, but it, the corporation sole is not unusual.

If you have a good board that does its job properly, it is useful. On the other hand, it can be a way, a buffer where the chief executive offices uses the board to insulate them against direction by the Congress or by the President, and this has occurred on occasion.

So it depends a lot on the quality of people who are appointed, and, often, these boards are used for certain types of patronage, when, frankly, at the White House, they are not taken that seriously, to be perfectly frank. These are part-time boards, we can take care of people, it is not going to be a very important job, they are a one-board member, so let us take care of them there. And so that is part of the problem. So, as Mr. Dean said, if you have got a good board and they function well and they are a good selection process, they are a plus, but very often they can be a minus.

The CHAIRMAN. If you have people good enough, any system can work. But it seems to me that directors who have no ownership interest may well end up like S&Ls. I mean, a lot of the problem with S&Ls, with the mutuals, where these boards of directors not having a stake in the thing, you know, were effectively playing with somebody else's money and so let the good times roll, and they did.

That can also happen with a single administrator, but I think less clearly so, particularly when you have it right under a cabinet secretary, it seems to me to be more accountability and less fractionating of responsibilities.

Dr. SEIDMAN. Well, that is correct, Senator Johnston. In our experience, we have found, often we have said one person is less likely to do something. Three people, when you share the responsibility with three or four other people, you may do things that you are not going to do by yourself.

Mr. **Dean**. Mr. Chairman, I am glad this colloquy has occurred because it emphasizes a point we made in our testimony. You would be much further ahead to revise the language in 2097 of last year, which gives the Secretary of Energy certain crucial safety/national security and general supervisory authority.

Once that secretary is there, then there is no need for a board at all. It is clear you need a single administrator who performs under certain types of general policy guidance, and you stated it very well in the legislation as the Senate passed it last year.

The **Chairman**. Thank you very much. And thank you, Mr. Chairman.

Senator **Ford**. Let me follow up just a little bit on this board connection. What would happen if your customers, the customers became a majority of the board?

Mr. **Dean**. There would be hopeless conflict of interest because their interests would obviously be to get the materials delivered to them at rates that might not be compatible with the intent of Congress to have a self-sustaining corporation.

Senator **Ford**. So what we are saying is that had better set up a policy and handle it differently and serve those people rather than have them on there serving themselves.

Dr. **Seidman**. Senator Ford, this is a role of an advisory committee, and where I think it would be appropriate to have representatives of the consumers of the service, some of them, represented on an advisory committee. I think that is their appropriate role. I think, certainly, the management of this corporation should consult with its consumers, be sensitive to their needs. And the proper arrangement would be advisory board and not to be on an, actually, a management board.

Senator **Ford**. So what you are saying, then, Doctor, is it would be perfectly appropriate to have them on an advisory committee but not on the board.

Dr. **Seidman**. Exactly.

Senator **Ford**. Okay, fine. I have no further questions here. It is always enjoyable to have Mr. Dean and the guru and we look forward to your coming around again. I enjoy it very much every time because we all, I always learn something and you all are very, very informative. Thank you.

Dr. **Seidman**. We always enjoy it, too.

Senator **Ford**. It is a pleasure to see you. Now, our next witness, then, will be Mr. Charles Brown, vice president of procurement, Virginia Power, from Richmond.

Mr. Brown, before you get started, I want to compliment you. I think we were looking for volunteers and you were the only fellow who would volunteer. And I found out the reason you volunteered, you may be a little new on the job. Well, I want you to relax and I will tell you that we appreciate your appearance here today and I look forward to your testimony. And we will have three or four questions after you get through. You may follow any procedure you wish. If you want to submit your statement for the record, we will do that and you can highlight it. It is your choice. But I do appreciate your coming.

STATEMENT OF CHARLES A. BROWN, VICE PRESIDENT, PROCUREMENT, VIRGINIA POWER

Mr. BROWN. Thank you, Mr. Chairman, members of the subcommittee. I am Charles Brown, as previously mentioned, vice president for procurement for Virginia Power, and, believe it or not, I am pleased today to have this opportunity to appear before you to offer our company's perspective on the issues affecting uranium enrichment.

I have distributed the written testimony to the appropriate parties and I will now summarize my testimony.

Senator FORD. Well, Mr. Brown, your full statement, then, will be included in the record as if you gave it and also your highlights.

Mr. BROWN. Thank you. Virginia Power serves more than 1.7 million customers and our four nuclear units represent about 34 percent of our total generating capacity. And that is about 3600 megawatts. Virginia Power has remained a low-cost producer of electricity during the 1980s and our average residential rates have only risen about 10 percent during this period, as compared to the rise in the Consumer Price Index of around 55 percent.

Our intensive effort to reduce fuel costs is one of the key reasons for our rate stability. We aggressively seek the best prices we can find for all of our fuel, including uranium enrichment. We have been buying enrichment services under contract from the U.S. government since December of 1982.

As you know, the Atomic Energy Commission initially offered enrichment services commercially, allowing for purchases as the need became known. Late in 1972, however, the AEC switched to long-term, fixed-commitment contracts which require utility customers to make firm commitments for enrichment services 10 years in advance of their needs.

The AEC also twice closed the order books during the 1970s, citing insufficient capacity to fill new orders. The second closing lasted four years, from mid-1974 to 1978. Some utilities have signed long-term, fixed-commitment contracts and had later cancelled or delayed even their nuclear plants. They were left with commitments for enrichment services that they no longer needed, but which the government required them to honor. Other utilities needed enrichment services but could not purchase them because the order books were closed.

This situation created a secondary market, I say, again, secondary market. The utility with excess enrichment contracts was paid a fee for signing a contract to a utility that might need it. Two European utility consortiums, Eurodif and Urenco, also started offering enrichment services during the late 1970s. The secondary market in the U.S. and the entry of Eurodif and Urenco marked the end of DOE's monopoly as the world's only supplier of enrichment services.

At the same time, and as a result of that, DOE began losing its market share; although DOE periodically tried offering new types of contracts with more reasonable terms, it never caught up with the needs of its customers. Eurodif and Urenco and the secondary market in general continued to flourish.

We believe that the policies governing DOE's operation prevented it from operating efficiently and that still continues today. Let me offer some specifics. First, DOE's policies for initiating contracts make no concession to a utility's circumstances or to their needs. DOE offers what may be called "one size fits all" contracts developed unilaterally by DOE and simply mailed to its customers. Take it or leave it. And, as you know, very little, if any, negotiation is allowed under the current system.

Second, DOE lacks the flexibility to adjust contracts as the market or a utility's needs change. Its solution to market changes and problems brought about by its contracts has been to develop a new type of contract. Unfortunately, developing a new contract is a lengthy process, and, by the time it is done, conditions have changed again and the new contract does not fit the current problem. Many utilities, Virginia Power included, have routinely had to resort to contract termination as the only means of contract management and some element of control.

Third, because of the budget and appropriations process, DOE cannot make timely expenditures to respond to opportunities to reduce its costs if the expenditures required are not already in the approved budget for a given year. Proposed legislation might add to the enterprise's cost burden—let me say that again. Proposed legislation that might add to the enterprise's cost burden also creates uncertainty for DOE's customers.

In general, utilities are reluctant to make long-term supply commitments if they fear the DOE price might rise sharply. Although most of our history as a buyer of nuclear enrichment services, throughout most of our history, our policies have been consistent, and what we wanted to do was to purchase our commodities on a competitive basis. In fact, Virginia law itself requires the use of competitive bidding to the extent that it is practical.

The enrichment market has developed to the point where we can buy enrichment services from a number of sources. We also believe in diversifying our sources of supply, which helps to hold down prices and minimize the supply risk.

The strength of the market and our desire to diversify sources have led us to exercise options under our DOE contracts. Over the next seven years, we will remain committed to DOE for at least 70 percent of our enrichment requirements, which is the minimum percentage required under DOE's utility services contract.

We plan to buy the rest of our needs competitively. We will not commit to DOE or any other supplier for any of our needs beyond, between 1996 and 1999, until what we perceive as some optimum timing that will allow us to do so. This means, this does not mean that we are rejecting DOE as a supplier. Of course not. We have an annual nuclear fuel budget for $100 million, of which $40 million is for enrichment services. For the sake of our customers, we must take a hard look .at the entire market in committing such large-volume dollars.

Virginia Power believes that a competitive world enrichment market is essential to maintaining low fuel costs and low electricity rates. We believe that the interests of Virginia Power and the country would be well served if the DOE enrichment enterprise were to become a strong competitor in the marketplace. Legislation is necessary to accomplish this, and we welcome the efforts by you, Senator Ford, and the subcommittee to fashion a bill which restructures enrichment enterprise.

It is not my purpose here today to address the details of the legislation except to say that it should provide a new, independent enterprise which is capable of operating on a competitive basis. And I appreciate the opportunity to be here before you today and I would be happy to answer any questions that you may have.

[The prepared statement of Mr. Brown follows:]

Testimony By

Charles A. Brown
Vice President - Procurement

on behalf of

Virginia Power

to the

Energy Research and Development Subcommittee
Energy & Natural Resources Committee
United States Senate

on

Uranium Enrichment

April 20, 1989

Mr. Chairman and Subcommittee Members:

I am Charles A. Brown, Vice President - Procurement. My statement is made on behalf of Virginia Power and its ratepayers. I will offer my Company's perspective on the issues affecting uranium enrichment in the United States today and which are under consideration by this subcommittee.

Virginia Power is the principal subsidiary of Dominion Resources, Inc. We have operations in Virginia and north eastern North Carolina. The Company is the nation's 11th largest investor-owned utility in terms of total electricity sales with more than 1.7 million customers. The Company's four nuclear units provide 34 percent of the Company's total generating capacity, or more than 3600 megawatts. We operate two each at the Surry Power Station and the North Anna Power Station.

Virginia Power's electricity operations produced just over $3 billion in revenues in 1988. During the 1980's, we have made dramatic improvements in managerial and operational efficiency, and have been successful in our efforts to remain a low-cost producer of electricity. The Company's average residential customer's rates have increased only 10 percent between January 1980 and December 1988 while the Consumer Price Index increased 55 percent over the same period. Typical commercial rates rose only 8 percent and industrial bills actually declined more than 2 percent.

This rate stability is due in large part to intensive efforts by Virginia Power to reduce fuel costs. Fuel costs are the Company's single greatest expense and largest component of rates. The average fuel cost of each kilowatt generated in 1988 by the Company was down 45 percent from the cost in 1980.

To remain a low-cost producer in an increasingly uncertain utility business, Virginia Power must aggressively seek the best prices we can find for all fuel, including uranium enrichment services. I will focus the balance of my comments on the Company's efforts to purchase enrichment services.

Historical Perspective

To fully appreciate the significance of DOE's and the Company's role in today's uranium enrichment market, some historical perspective is necessary. The Company initially purchased enrichment services through one of its contractors. In December 1972, we began purchasing directly under a requirements contract with the Atomic Energy Commission, now the Department of Energy. A requirements contract, as its name implies, allowed for the purchase of enrichment requirements from DOE as the need became known to the Company.

The same month we signed our first contract with the AEC, the requirements type contract was discontinued. It was replaced with the Long Term Fixed Commitment (LTFC) contract. Under the LTFC, the Atomic Energy Commission required utilities to make firm commitments 10 years in advance of need. In many cases, utilities had to make commitments under the LTFC while plants were still under construction and requirements were difficult to estimate.

The switch to the LTFC was made because the AEC claimed that the requirements contracts did not give them enough lead time on customers' commitments to plan for capacity expansion. Enrichment capacity was insufficient to meet anticipated demand, and the AEC decided that long term firm commitments were the only way to define what was required. The AEC then closed the order books until September 1973 due to the capacity shortage.

The closing of the order books and the prospects of a shortfall in enrichment services hampered utility planning, and created a climate of uncertainty in the utility industry as to the future availability of enrichment services. Several utilities declined DOE's offer of the new LTFC contract because they were unwilling to make term commitments. Instead, they continued to buy under their requirements contracts. Virginia Power continued its existing requirements contracts, but signed LTFC contracts for future planned units.

In June 1974, AEC closed the enrichment order books a second time to evaluate its commitments and production capability. This halt in orders lasted until May 1978, when the newly-created Department of Energy resumed taking orders. During this same period, a number of planned nuclear facilities were cancelled or delayed, largely due to the reduced electricity demand growth which followed the Oil Embargo of 1973-1974. The utilities, however, had been left with commitments under their LTFC contracts which the government required them to honor. Since the government was not taking orders, utilities were able to sell the enrichment contracts to other utilities that could not obtain contracts from the AEC, including foreign utilities. This was the beginning of the secondary enrichment market. Enrichment contracts were legally assigned from one utility to another and a fee was paid to the original contract holder.

The secondary market was one of two factors which marked the end of DOE's monopoly as the world's only supplier of uranium enrichment services. the other factor was the start-up of two European enrichment service consortiums, Eurodif and Urenco. They began developing their own enrichment capacity partially as a result of DOE's inability to provide sufficient capacity to meet its current and anticipated obligations. Enrichment services in Europe became available in the late 1970's and resulted in the loss of market share to DOE, particularly from European utilities.

In July 1978, DOE announced the Adjustable Fixed Commitment (AFC) contract. The Long Term Fixed Commitment contract had resulted in significant overcommitments for enrichment services by utilities. DOE developed this new contract to allow utilities to commit five years in advance of their needs, and it allowed some adjustment to commitments in the third and fourth years forward. Conversion to this new contract also allowed utilities to reschedule some previous commitments made under the LTFC for a fee. The AFC was a move in the right direction, but still required utilities to make long term commitments for future enrichment services.

Overcommitments and excess capacity became by-words of the industry. Utilities had significant overcommitments for enrichment services, but were bound by contract to continue purchasing. This created an additional problem. To purchase enrichment that was not needed, unneeded uranium also had to be purchased. This created huge inventories of enriched uranium that would not be needed for years in which utilities had invested hundreds of millions of dollars.

By this time, the supply available to the secondary enrichment market far exceeded the demand. The only utilities that had uncommitted demand were those few utilities that had maintained their requirements contracts with DOE and had previously terminated their obligations to purchase their requirements under these contracts. These few utilities were now in a position to purchase enrichment services to meet their needs from several market sources on a competitive basis. This phase in the development of the secondary market began in earnest in 1981 and provided an important outlet for the oversupply. Buyers in this market, however, expected to pay a price well under DOE's price.

In 1984, DOE implemented the Utility Services Contract, or USC, to try to halt the continued loss of market share by providing needed flexibility to customers. The USC provided DOE with a contract form that allowed it to compete with Urenco and Eurodif. At the same time DOE reduced contract prices.

For the first time, DOE had a contract that provided customers the option of purchasing only a portion of their needs from DOE. The contract still committed customers to buy 70 percent of their requirements from DOE, but the remaining 30 percent could be purchased from the burgeoning enrichment market.

I believe that many of the policies governing DOE's operation of the enrichment enterprise do not allow it to be run in an efficient, businesslike manner. Furthermore, the contracts used by the DOE, while improved, never caught up with the needs of its customers and the market. Let me offer a few instances.

First, while contract termination might generally be considered a radical course of action, DOE's customers have routinely been forced to resort to termination as a means of managing their DOE Contracts. Virginia Power itself had been forced to resort to contract termination for years. Only after introduction of the USC was Virginia Power able to seek bids for enrichment services on a competitive basis for its uncommitted requirements without first terminating a commitment to DOE many years in advance. Since each of DOE's contracts have been developed on the premise that "one size fits all," termination has historically been the only available means of changing the terms and conditions under which enrichment services are purchased from DOE. For the most part, each type of contract has been unilaterally developed by DOE and then simply mailed to each utility for acceptance. Very little, if any, negotiation was allowed or possible under the policies in effect. This is totally at odds with commercial procurement practices throughout the industry.

Second, in addition to the initial contracting, DOE lacked the flexibility to respond to the long term needs of the customer through changes to existing contracts. Historically, DOE's solution to solving its problems has been to develop and implement a new type contract. However, by the time a new contract has been made available, the situation has deteriorated further and the new contract has not solved the problems in the market. Most new DOE contract implementations, therefore, have been followed by strong secondary market activity which has provided the outlet and relief sought by DOE's customers.

Third, the fiscal and financial constraints under which DOE is required to operate create inefficiencies in DOE's business planning. The annual budget and appropriations process, for example, hampers DOE's ability to respond to changing conditions and opportunities which would benefit the enterprise, and subsequently its customers. If the expenditure is not already part of the approved budget for the year, DOE cannot spend the money.

Additional fiscal uncertainty is created for DOE's customers whenever proposed legislation exposes the enterprise to additional cost burdens. Over the past few years, legislation on numerous occasions has threatened to increase DOE's costs, and, therefore, the prices DOE would charge for enrichment services. As a long-term customer with forward commitments to purchase enrichment services, Virginia Power believes that this price uncertainty makes for an unacceptable long term relationship.

The Company's Perspective

Regardless of the policies governing the way DOE has operated the enrichment enterprise, the Company's policies have remained consistent in requiring that enrichment services be purchased on a competitive basis. Virginia law requires the use of "competitive bidding to the extent practicable in its purchasing." Competitive bidding has consistently provided the Company with the best possible offers from which it has purchased fuel to meet its requirements.

The enrichment market has expanded and developed to the point where enrichment services can be obtained from a variety of sources including both primary and secondary suppliers. Solicitations for bids from this market can now produce competitive prices. To comply with the Company's policies and to conform to the law, we must consider all options in obtaining enrichment services.

In addition to seeking bids on a competitive basis, the Company maintains several principles which further guide its overall procurement philosophy. These include the following: (1) not committing all requirements to a single source of supply, (2) maintaining multiple supply contracts which provide a mixture of both long- and short-term supply and a variety of pricing mechanisms, (3) diversifying commitments over time and market environments, and (4) diversifying contracts over various geographical and political regions. These principles provide the Company with sufficient diversity to provide consistently low prices and allow costs to be held down while maintaining a manageable level of risk of supply.

In order to take advantage of this market and to implement the principles listed above, Virginia Power has exercised certain flexibilities available under the Company's contract with DOE. Over the next seven years, the Company has elected to remain committed to DOE for the supply of at least 70 percent of its enrichment requirements. For the four years beyond that, 1996 through 1999, the Company has provided notice, as required under the contract, to leave uncommitted 100 percent of its requirements. We believe that these elections will provide us with the opportunity to obtain a timely and competitive supply of low-cost enrichment services in the future which could very well include DOE as one of our suppliers.

We would encourage both DOE and the members of this Committee not to take the Company's actions with respect to our contract with DOE as a rejection of DOE as a reliable enrichment supplier. We view our actions as taking appropriate advantage of an opportunity to postpone making a firm purchase commitment until the time of delivery is closer. We have not made any plans with any other supplier to replace these commitments. We will continue to study market conditions and make our supply decisions at a later time.

Conclusion

As a customer of the DOE enrichment enterprise throughout our entire commercial history, we have been very aware of the changes in DOE enrichment program policy over this period. With an annual nuclear fuel budget of over $100 million, $40 million of which is for enrichment services, we must make prudent procurement decisions from the standpoint of both price and security. Company policy, the uncertain nature of policy which governs DOE's operations, and the presence of additional suppliers require us to buy from DOE only when that represents the best course for our ratepayers.

Virginia Power believes that a competitive world enrichment market is essential to maintaining low fuel costs and electricity rates for its ratepayers. We believe that the interest of Virginia Power and the country would be well served if the DOE enrichment enterprise were a strong competitor in that market.

Legislation is necessary to accomplish this and we welcome the efforts by Senator Ford and the Subcommittee to fashion a bill which restructures the enrichment enterprise. It is not my purpose to address the details of the legislation except to say that it should provide for a new independent enterprise which is capable of operating on a competitive basis.

I appreciate the opportunity to present the Company's views on this important subject. If you have any questions, I would be happy to answer them.

Senator **Ford**. Thank you, Mr. Brown, for a fine statement. You have, your company, you and your company have made a judgment to be 100 percent uncommitted for your enrichment requirements in the years 1996 through 1999. Am I correct in that?

Mr. **Brown**. That is correct.

Senator **Ford**. Is that a risk for your rate payers or are you convinced that the capacity will be available in the future to cover those demands?

Mr. **Brown**. Senator Ford, just about every business decision we make has some element of risk in it. Obviously, there is some element of risk in putting 100 percent of our commitments on the block. But we feel, after a very careful analysis, that there is less risk in that, five, six years out, than there is in committing to DOE 10 years out for what could be a very high-priced supply of enrichment services.

So, in summary, while there is some risk, we feel that risk is less than going the DOE route and committing for services that we do not know what the market will bear at that time. In terms of feeling confident about the market, we feel reasonably sure that enrichment services outside of the DOE rim will be around in the next five- to 10-year period, and that it will serve well to help create this competitive environment that we have been seeking.

Senator **Ford**. What are the risks of purchasing in the spot market versus the certainty of long-term commitments?

Mr. **Brown**. Well, there are not a whole lot of risks unless you consider that possibly the price of spot services could rise above those of long-term commitments, and that has not generally been the trend in many commodities. And it is the only one that we see.

At Virginia Power, of course, we would never consider—"never" is always a bad word—but I think it would be very difficult for us to consider either going 100 percent to a spot market-type of procurement practice. There is a bit of danger in that, obviously. And we have procured enrichment services pretty much like how the remaining part of our procurement program, and that is to be reasonably conservative, commit long-term to certain volumes while playing the spot market for certain other volumes in meeting our needs.

Senator **Ford**. Do you think, well, let me ask you this a little different way. What are the specific businesslike characteristics that you might look for when you contract for enrichment services? Do you think that the enrichment corporations that are proposed here in this legislation, by either the Department of Energy or Amendment No. 6, will aid the enrichment program in meeting your customers needs?

Mr. **Brown**. Well, Senator Ford, we pretty much stand with the industry on that question and, as testified here yesterday by Mr. Farley, we think that this is a step in the right direction. We feel that it will help. Basically, though, what we are looking for is a bill that will allow DOE or whatever results from DOE to be very competitive, to be very responsive, to be very flexible, and to allow us to plan our business without committing out eight to 10 years in advance.

Senator **Ford**. There are some bubbles out there and only some of them have come to the surface because of security reasons, I suspect. But there is enough discussion on the street about the availability and price of Soviet uranium and SWUs in the U.S. market. Have you made a judgment whether to make, or have you made a judgment whether or not this might be a good thing?

Mr. BROWN. No, we have not made any judgment on that, Senator. Of course, we read in the papers, as others do, about what may exist in terms of Soviet SWUs coming into the country, but we have not analyzed or decided whether that will be or is a good thing. We know that we have not committed our company to going that route just yet.

Senator FORD. Can you tell me that there is Russian SWUs available or readily available out there at a competitive price?

Mr. BROWN. Only what we read.

Senator FORD. You have not been approached or——

Mr. BROWN. We have not solicited Russian SWUs, a solicitation that, perhaps, they would respond to, in terms of price and availability, would put us into a position to answer your question about its availability. But until we go through that exercise, we only know what we have read and that is the same thing that all of you have read.

Senator FORD. DOE provides what we refer to as toll enrichment services for its customers. The customer buys the uranium and brings it to DOE to enrich, I am sure you are well aware. Some other suppliers of enrichment services simply enrich uranium products. This means that they will sell the utility uranium that is already enriched. Why might this type of product be attractive to a utility and do you see the market heading away from the toll enrichment business and toward the selling of enrichment uranium?

Mr. BROWN. Well, at Virginia Power, in the competitive nature of procurement, we are looking for the lowest evaluated price, and, of course, along with that comes service. I would think any difference between the two as we look out over the next several years is going to rest with what comes in to be more competitive.

The toll process tends to consume more finances in that money tends to be tied up a little longer in the way that process operates. I would think if there are competitors or sources out there that could sell a complete product satisfactorily, where your payment for the toll product would occur all at one point, basically, hopefully, when you take receipt, I would think there would be significant advantages there, and we would be interested in such an approach.

Senator FORD. Do you think, then, that we are looking toward the end of the combination of both products and services?

Mr. BROWN. I do not think we can ever look to the end of what I would call a total service. Whether we buy the uranium separate from the enrichment service, I think to whomever is making those supplies, service—such things as on-time delivery, response to commercial terms and conditions—all those things could fall under the umbrella of service. And I would look at that as something to provide utilities with a complete package in the nature of what you are asking.

Senator FORD. Has your company been approached or do you have any information about, maybe, a private enrichment plant being constructed in this country?

Mr. BROWN. Would you say that again?

Senator **Ford**. Do you have any knowledge of another company or industry being constructed in this country to enrich uranium and furnish SWUs for companies such as Virginia Power?

Mr. **Brown**. Well, only what we see and read, again, Senator. We have heard that there are discussions taking place in various parts of the country concerning some opportunities that may be here in the United States. I am not aware of my company being approached to participate in such a consortium, if that is what it is called.

Senator **Ford**. Do you think it will be a consortium, if it occurs?

Mr. **Brown**. I do not have any idea. I think that is the word that I heard when it was mentioned.

Senator **Ford**. Well, your rumors would be better than ours. We are convinced, or I am convinced, and, of course, as you know, I have one of the plants that is enriching uranium now in my state. And I have been looking at this situation for a long time and watched the deterioration, 30 percent of our domestic customers a year ago cancelled their contracts for them, in the 10 years, I guess, the 1996–1999 period in which you are in.

And I am convinced that, if we follow this route, we can return that to reliable service at a competitive price if we follow this route. I see nothing but deterioration and overseas competition that will cause our business to decline and our ability to keep it here for our domestic customers. At some point, we may need it worse than we need it today. But we do need it to put it in a competitive position and, then, ultimately, hopefully, private enterprise.

So I appreciate your coming today and appreciate your testimony. And it may be that we will find it useful to give you some further questions after we analyze, maybe we will find a blank or two that you could be helpful in giving us some answers, then we will submit some questions to you in writing and, hopefully, that you will respond in a timely manner.

Mr. **Brown**. Thank you, Senator.

Senator **Ford**. You are mighty nice, Mr. Brown. Thank you. The next witness is Commissioner William Badger, Maryland Public Service Commission, Committee on Electricity, from the great state of Maryland, representing the National Association of Regulatory Commissioners. And you have a companion there and we ask that you advise us of her name so that it might be part of the record.

STATEMENT OF WILLIAM A. BADGER, COMMISSIONER, MARYLAND PUBLIC SERVICE COMMISSION, ACCOMPANIED BY JULIAN WOOD, ASSISTANT DIRECTOR OF CONGRESSIONAL RELATIONS, NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS

Mr. **Badger**. Thank you, Mr. Chairman. With me is Julian Wood. She is the Assistant Director of Congressional Relations for NARUC. As you have indicated, I am a member of the Public Service Commission and also serve as chairman of the Committee on Electricity for the National Association of Regulatory Utility Commissioners, commonly referred to as NARUC, on whose behalf I appear today.

As you are aware, NARUC is a quasi-governmental, non-profit organization. It serves as the national representative of the 50 state commissions responsible for the administration of the regulatory process that determines rates charged by electric utilities. We very much appreciate your invitation to express our views on this important legislation which is under consideration by the Senate.

Several of the issues contained in this legislative proposal were addressed by NARUC as part of its 1987 summer meetings, and, specifically, by its Committee on Electricity and its Subcommittee on Nuclear Issues. This effort resulted in the adoption of a formal resolution by the NARUC executive committee in July of 1987, which was attached to my pre-filed statement.

And, very briefly, this resolution, as it pertains to the legislative proposal that is before you, recommended that, one, Congress favorably consider legislative proposals that would establish a government corporation which would operate similar to other government functions where the relationship with the public is one of an entrepreneur rather than a sovereign, where users rather than taxpayers would be supporting the cost of such services.

And, two, that Congress prohibit the Office of Management and Budget and the General Accounting Office from implementing retroactive, unrecovered cost payments in order that enrichment services might be priced on the basis of participating in the competitive market.

With your permission, let me first address the issue of organizational structure. As you know, uranium enrichment facilities were first constructed by the government in World War II for the development of weapons for our national defense. It was not until the 1960s that nuclear power was used for commercial purposes. The pricing system set forth by the Atomic Energy Commission and later by the Department of Energy required the payment of a fee to recover the cost of enrichment services.

From this, it would appear that Congress intended this program to be self-supporting, since appropriations were established at a level approximating expected revenues. What has occurred is that, while DOE originally commanded 100 percent of the world market for enrichment services, the share in some 13 years has been reduced by approximately one-half, with the resulting unhappy circumstance of excess production capacity and a shortage of revenues to finance technology improvements.

It is our understanding that the Soviet Union now controls 10 percent of the European market, compared to eight percent held by DOE. We all learn that hindsight is a wonderful attribute, and perhaps international competition would have never occurred were it not for our government's decision in 1974 to discontinue foreign orders for uranium enrichment.

DOE's ability to compete has also been hindered by the enormous demand charge contract commitment to the TVA authority in the range of $4 billion; and then with $3 billion spent on research and development and construction of a gas centrifuge in a Richmond plant that was later terminated. However, in fairness to DOE, those years were very difficult times in the exercise of U.S. energy policy.

We now have a situation in which foreign markets are operating more efficiently, with lower-priced contracts, and, as a result, and you have heard today, several utilities have notified DOE that they do not intend to purchase enrichment services in the late 1990s. And commitments can be cancelled without penalty.

If this departure continues, we believe it can only result in higher costs for SWUs and even a larger loss of market share. NARUC believes that the establishment of a government corporation may permit it to compete in the realities of a competitive marketplace, and, hopefully, this restructuring will permit our nation to re-establish its position as a dominant player in the international marketplace.

The provision of enrichment services in an environment driven by market forces has been further complicated by the issue of prior, unrecovered government cost. Both GAO and OMB have taken positions that the domestic nuclear industry should be required to pay the U.S. Treasury billions of dollars for outstanding debt. NARUC is unable to identify any provision of the Atomic Energy Act requiring payments by commercial customers to the U.S. Treasury. These facilities, as I mentioned earlier, were constructed for national defense purposes, and, notwithstanding, commercial customers for the past 20 years were charged a fee which included a depreciation element to provide for the recovery of capital.

Finally, the NARUC would note that the allocation of costs between the defense and commercial sector has never been undertaken. Clearly, subjecting a new government corporation to retroactive debt can only result in higher prices for enrichment services and provide international markets with an even greater advantage.

In summary, the NARUC recognizes that the issue of uranium enrichment and supply is a complex matter. But we encourage you to extend favorable consideration to the formation of a government corporation, should you conclude that such a structure would be cost-effective and permit it to operate in a responsible and responsive manner in the marketplace. And, finally, we would respectfully suggest that this desirable objective may not be achievable unless Congress concludes that retroactive, unrecovered cost payments are inappropriate.

We pledge our continued assistance to you as you proceed with this difficult debate. Thank you very much, and I will be happy to answer any questions that you might have, sir.

[The prepared statement of Mr. Badger follows:]

UNITED STATES SENATE
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
COMMITTEE ON ENERGY AND NATURAL RESOURCES

TESTIMONY OF THE

NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS

1102 INTERSTATE COMMERCE COMMISSION BUILDING
P.O. BOX 684, WASHINGTON, D.C. 20044

PRESENTED BY

WILLIAM A. BADGER, COMMISSIONER
MARYLAND PUBLIC SERVICE COMMISSION

ON

URANIUM ENRICHMENT AND SUPPLY

APRIL 20, 1989

Mr. Chairman and distinguished members of the Subcommittee:

My name is William A. Badger, and I am a member of the Maryland Public Service Commission and Chairman of the Committee on Electricity for the National Association of Regulatory Utility Commissioners, commonly referred to as the NARUC, on whose behalf I appear today.

The NARUC is a quasi-governmental, nonprofit organization founded in 1889. Within our membership are the governmental agencies of the fifty states, the District of Columbia, Puerto Rico and the Virgin Islands who are engaged in the regulation of utilities and carriers. Our chief objective is to serve the public interest by seeking to improve the quality and effectiveness of government regulation in America.

Introduction

We deeply appreciate this opportunity to express our views on the legislation under consideration before the Senate regarding the Department of Energy's (DOE) uranium enrichment program (S. 83 and Amendment No. 6.) As you are aware, State Public Service Commissions (PSC's) have general responsibility for discharging a regulatory process that determines rates charged by electric utilities. Since domestic nuclear utilities are the largest commercial uranium enrichment customers, we are, therefore, uniquely situated to offer some insight on this legislative package and its potential impact on electric ratepayers.

From the outset, let me emphasize that my appearance today is to provide the Subcommittee with the position taken by the NARUC at its 1987 summer meetings with respect to uranium enrichment legislative proposals that were being considered at that time. The NARUC review was prompted by concerns expressed by many state regulators on the significant issues of unrecovered government costs, continuation of free trade policies and the establishment of a government corporation to administer the enrichment program. This effort undertaken by the NARUC Committee on Electricity and its Subcommittee on Nuclear Issues culminated in the adoption of the attached formal resolution by NARUC's Executive Committee on July 22, 1987. While a more complete discussion of the NARUC position is contained in the resolution, the NARUC specifically recommended that, subject to a determination by Congress, unsubsidized savings to electric utility ratepayers were likely to occur should:

a. The Congress of the United States favorably consider legislative proposals that would establish a government corporation that would operate similar to other government functions where the relationship with the public is one of an entrepreneur rather than a sovereign, and where users, rather than the general taxpayers, will be supporting the cost of such services.

b. The Congress of the United States prohibit the Office of Management and Budget (OMB), and the General Accounting Office (GAO) from implementing retroactive recovery payments so as to permit the pricing of enrichment services on a basis of participation in a competitive market.

c. The free trade policies with respect to the supply of enrichment services be continued.

Organizational Structure

Uranium enrichment facilities were first constructed by the federal government during World War II in conjunction with the development of nuclear weapons for our national defense. It was not until the 1960's that nuclear power was used for commercial purposes. At that time, the Atomic Energy Act (AEA) specified that nuclear power plants could lease fuel from the government (rather than purchasing it) after it had been enriched. Congress subsequently amended that AEA so that private companies could own uranium, but the federal government would continue to enrich it.

This "Privatization Act" of 1964 set forth the manner in which the uranium enrichment enterprise would operate. The Atomic Energy Commission (AEC), and later the Department of Energy (DOE), provided the service of enriching uranium for the Defense Department and commercial nuclear power plants. Today, DOE's principal commercial uranium enrichment customer is the domestic nuclear power industry with its 100 reactors that utilize approximately $1.0 billion in enrichment services per year.

The pricing system set forth by the AEC and currently used by DOE for the enrichment enterprise requires utilities to pay the government a toll fee to recover the costs of enriching the uranium. Thus, it would appear that Congress intended that the enrichment program be self-supporting considering that appropriations were established at a level approximating expected program revenues. Prior to the mid-1970's, DOE provided 100 percent of the world demand for uranium enrichment services. In a matter of 13 years, it appears that the federal government has surrendered approximately 50 percent of the uranium enrichment program market place and is now experiencing excess production capacity as well as a shortage of revenues required to finance technology improvements. In this regard, it is interesting to note that DOE's European market share has declined from 100 to eight percent and now compares unfavorably with the Soviet Union, which now controls over 10 percent of this particular market.

With the great advantage of hindsight, we can all speculate as to the wisdom of the 1974 decision to discontinue foreign orders for uranium enrichment, thus prompting the introduction of international competition; the contractual commitments with the Tennessee Valley Authority which required the payment of $4.0 billion in demand charges; and the $3.0 billion spent on research, development and construction of a gas centrifuge enrichment plant which was subsequently terminated in favor of the laser enrichment process. These were difficult years in the exercise of United States Energy policy, and the decisions made were probably appropriate for their time.

Under circumstances where foreign markets operate with more modern and efficient facilities and offer better term and lower priced contracts than the federal government, it should come as absolutely no surprise that several utilities have notified DOE that they do not plan to purchase enrichment services from DOE in the late 1990's when such annual commitments can be cancelled without penalty. If this process continues, and given the manner in which the government appropriation process operates, it is likely that the cost of separative work units (SWU's) will continue to rise and produce an even greater DOE loss of market share.

The NARUC respectfully submits that it is timely for Congress to consider restructuring of the DOE uranium enrichment enterprise in order that it may compete in a competitive market place. The provision of uranium enrichment services represents a business enterprise with characteristics that are distinguishable from traditional government functions.

S. 83 and Amendment No. 6 address these issues. These pieces of legislation would establish a government corporation, the United States Enrichment Corporation (USEC). The USEC would operate under the guidance of an advisory board composed of individuals with substantial business skills and be managed by a presidential appointee. It would issue capital stock with dividends being transferred to the U.S. Treasury after expenditures were made for research and development and capital investment, and after the establishment of cash reserves. It would appear that this type of organizational structure would be an important step toward realizing a truly competitive enrichment services program and re-establishing the United States position as a dominant player in the international market place.

Prior Unrecovered Government Costs

The difficulties experienced by DOE under our government's failure to recognize that DOE no longer is a monopolist but is part of a world enrichment service program driven by market forces, are unfortunately, further complicated by the issue of "prior unrecovered government costs." Both the Office of Management and Budget (OMB) and the General Accounting Office (GAO) argue that the domestic nuclear industry should be required to pay the U.S. Treasury billions of dollars in outstanding "debt". The position of these federal agencies is outlined in an October, 1987 report in which GAO established the value of unrecovered costs at a level of $8.8 billion.

This position has been advanced despite the fact that the enrichment facilities were originally designed and constructed for national defense purposes. Contrary to the assertions of OMB and GAO, the NARUC is unable to identify any provisions in the Atomic Energy Act requiring payments by commercial customers to the U.S. Treasury. It is the NARUC's understanding of the enrichment program operation that, for the past two decades, the fees established for the commercial customers also reflected a depreciation element to provide for the recovery of capital.

Now, as more utilities may go elsewhere for uranium enrichment services, the overall cost of operating the U.S. enrichment facilities will be born by fewer and fewer customers. Ultimately, these costs will be passed on not just to electricity ratepayers of the remaining utility customers but also to all taxpayers as the U.S. Defense Department will be forced to carry more and more of the basic operational expenses of operating enrichment facilities.

Additionally, it is NARUC's understanding that DOE's financial statements and accounting records do not reflect an alleged "debt" for commercial uranium enrichment services. Indeed, they show that all services had been paid for correctly on a cash basis. Meanwhile, the federal government still holds title to the uranium enrichment facilities.

Considering these factors and the appropriations funding mechanism that was in place, it is the position of the NARUC that retroactive recovery payments are inappropriate and should be precluded by Congress. We recognize there may be substantial disagreement with respect to the "debt" question. However, it seems clear that subjecting a new USEC to a retroactive debt of this nature would unnecessarily burden it from realizing its competitive potential. It would force the corporation to charge higher prices, inflating the price of uranium enrichment in this country for both commercial and defense customers, and giving foreign facilities an even greater advantage in the competition for utility customers. To undertake the restructuring of the financial and organizational management of the uranium enrichment enterprise and then impose new fees is, in our opinion, clearly counter-productive. Such a fee would threaten the security provided by a long-term, reliable and low-cost service of the uranium enrichment enterprise.

Summary

The supply of enrichment services to the domestic nuclear power industry is a critical and necessary element in the fuel cycle of our nation's second largest source of electricity generation. The evidence is clear that the presence of international competition has resulted in the federal government relinquishing approximately 50 percent of the uranium enrichment program market, leaving it with excess production capacity and less revenue to finance technological improvements. This situation is exacerbated by the U.S. Treasury repayment issue and the OMB, who continues to develop budgets which provide for repayment funds in the establishment of enrichment services fees. The NARUC respectfully recommends that:

1. Favorable consideration be extended to the concept of a government corporation should you conclude that such an organizational structure would be cost effective and permit it to compete in a responsible and responsive manner in the international market place.

2. Congress prohibit OMB from implementing retroactive recovery payments which only further serve to inhibit DOE's ability to participate in a competitive market.

In closing, again permit me to express our appreciation for this opportunity to present the NARUC's position before the

Subcommittee. The NARUC would encourage this Subcommittee to continue exploring the issues of ensuring a competitive uranium enrichment program for our nation. We pledge our continued assistance as you proceed with this difficult debate.

Resolution on Nuclear Enrichment Services

WHEREAS, The supply of enrichment services to the United States civilian nuclear power industry is a critical and necessary element in the fuel cycle of our second largest source of electric generation; and

WHEREAS, The Federal Government has provided enrichment services to electric utilities on a timely, reliable and dependable basis for a period now approaching two decades, operating as a monopoly until recent years; and

WHEREAS, The introduction of international competition has resulted in the Federal Government surrendering a large share of the uranium enrichment program marketplace so that it is now experiencing excess production capacity as well as a shortage of revenues required to finance technology improvements; and

WHEREAS, The Federal Government's ability to compete in the realities of a competitive market place has been hindered by the actions of the Office Management and Budget (OMB) and the General Accounting Office (GAO) to collect "unrecovered government costs" ranging from $3.5 to $8.8 billion for transfer to the U.S. Treasury; and

WHEREAS, The principle of "unrecovered government costs" as well as the employed methodologies underlying these calculations advanced by OMB and GAO are highly controversial and were never contemplated and thus represent a substantial departure in the approach by which appropriations and revenues have funded enrichment activities; and

WHEREAS, The implementation of such retroactive additional payment program places a substantial financial burden upon electric utility ratepayers and may prompt the electric utility industry to turn to international markets to provide uranium enrichment services; and

WHEREAS, The provision of uranium enrichment services constitutes a business enterprise with characteristics which may be distinguished from traditional government functions which do not involve a buyer-seller relationship; and

WHEREAS, The Federal Government's uranium enrichment program could function more effectively as a government corporation where it could respond to the dictates of the market place; and

WHEREAS, The implementation of artificial trade or usage restrictions under consideration by the Congress of the United States will serve to increase the price of electricity and adversely affect the ability of the Federal Government to compete in the international marketplace; now, therefore, be it

RESOLVED, That the Executive Committee of the National

Association of Regulatory Utility Commissioners (NARUC), assembled in its Summer Committee Meeting in San Francisco, California, supports the restructuring of the Federal Government's enrichment service program so as to operate as a fully competitive industry responding to market forces and thus providing low-cost energy to ratepayers, provided that the Congress of the United States concludes:

1. That unsubsidized savings to electric utility ratepayers are reasonably likely to occur;

2. That no diminution of safeguards over strategic nuclear materials will occur;

3. That privately owned enrichment facilities will be regulated by the Nuclear Regulatory Commission;

4. That the common defense and security of the Nation will be protected; and

5. That competition in the provision of enrichment services will be furthered and unregulated monopoly power will not be granted; and be it further

RESOLVED, Upon such findings, the NARUC Executive Committee recommends that:

1. The Congress of the United States favorably consider legislative proposals that would establish a government corporation that would operate similar to other government functions where the relationship with the public is one of an entrepreneur rather than a sovereign, and where users, rather than the general taxpayers, will be supporting the cost of such services;

2. The Congress of the United States prohibit OMB and GAO from implementing retroactive recovery payments to permit the pricing of enrichment services on a basis of participation in a competitive market; and

3. The free trade policies with respect to the supply of enrichment services be continued.

Sponsored by the Committee on Electricity
Adopted July 22, 1987

Senator **Ford**. Commissioner, I have. Thank you for your testimony and we are grateful for you to come and we appreciate the support that NARUC has given to this piece of legislation. I want you to follow with me a little bit some testimony we had yesterday from the National Taxpayers Union. They were very critical of our bill. Now, the taxpayers union thinks DOE and our bill should take advantage, underscore "take advantage," of the long-term DOE contracts with utilities to charge much higher prices for enrichment services.

For example, Charles Montange, their counsel, said the following, and I quote from yesterday:

> DOE customers were and are locked into contracts through 1995, after which date DOE will face competition. Any reasonable business would price to maximize profit before that date.

Is that good practice for the operation of the federal uranium enrichment enterprise between now and 1995?

Mr. **Badger**. In my opinion, it seems to me that kind of logic has placed us in the very position we find ourselves today, that, clearly, it would seem to us, that if that were to be the strategy, to proceed with raising prices, that can only increase the prospect of customers fleeing the use of DOE to supply uranium enrichment services. And, to me, that would be counter-productive.

Senator **Ford**. Commissioner, the National Taxpayers Union—I want to get the other side of it so that, as a committee, we can look at it and try to make a determination. But the National Taxpayers Union has been the loudest advocate of recovering what they claim is the amount of $8.8 billion in what they say is quote, "unrecovered cost," end of quote, of the enrichment program.

One of Mr. Montange's major objections to our bill is that the proposed legislation also writes off essentially all the more than $8.8 billion in unrecovered cost to date. What NTU has in mind comes later in their testimony under "alternatives." They recommend that "the 1984 utility services contracts, with their unlawfully low prices—"I am quoting from them now—"should be renegotiated in prices charged so as to minimize taxpayers' losses. Or Congress should assess a fee on DOE customers adequate to recover DOE costs as provided under existing law."

Now, NTU believes DOE is required to recover $8.8 billion under existing law. Do you have any kind of comment that would refute that? We had testimony from Deputy Secretary Moore yesterday that, last year, we had from 1987, I guess, or 1986, about $364 million we felt like we owed the government. With the last two years, Secretary Moore said it was more like $28 million. And so we find a very wide disagreement here. Can you help us just a little bit?

Mr. **Badger**. Mr. Chairman, the issue of unrecovered debt was addressed by NARUC. NARUC has rejected the proposition that the debt exists. In our opinion, because these facilities were originally constructed for defense purposes, in recognition of the appropriation process that had a process which had cost equal to revenues, it is our position that there is no debt associated with this.

But the other end of this is that, if there is a suggestion that we have debt, then that, to me, would only serve to make it more difficult for a new corporation to function in the marketplace. And it is that kind of, perhaps, artificial process that will only cause more customers to seek to turn to the international marketplace to meet their enrichment services. So we would also disagree with that assessment.

Senator **Ford**. Well, the DOE statute 161(V) provides cost-recovery but does not specify repayment of any debt. Evidence of this is a lack of a debt line in federal budget or in treasury that even shows a debt. So we feel that we are on the right track, and I am certainly glad that you agree with me.

NTU believes that taxpayers' suits should be authorized to enforce the provisions of the legislation requiring the corporation to make money for the taxpayers. Do you have any ideas or suggestions on that one?

Mr. **Badger**. Well, hopefully, if the corporation is able to be structured in a manner that it can compete in the marketplace in a most efficient manner, I think it is reasonable to expect that the corporation would make money for the U.S. Treasury. I do not believe it would be appropriate to initially structure the pricing so that it would be guaranteed a profit because I think they are going to have to survive in the marketplace as well.

But, assuming that a structure could operate economically in efficiency, I think one would expect that kind of operation would result in profits being eventually returned to the treasury.

Senator **Ford**. Just like we discussed yesterday, I am not sure you are aware of the testimony, but the procedure we have now, the uranium enrichment division cannot even secure the necessary funds to be applied this year to reduce the price, and, under our system, it will be next year and that will cause the price to double. If it was a government corporation, they could go ahead and make a decision and move with dispatch and save the money and reduce the cost and help their sales and be more competitive. It just makes sense to go this route.

Mr. **Badger**. I think that is a weakness that is inherent in an appropriation-revenue process brought about by the budget.

Senator **Ford**. It is the cost, not the price, is it not?

Mr. **Badger**. Yes.

Senator **Ford**. One of the things that has disturbed us and I think it is kind of an undercurrent, and I asked Mr. Brown before you. He indicated that the only thing he knew about it was what he read in the paper.

But in the search for lower fuel costs, many utilities have left the U.S. borders and are looking overseas, including at the Soviet Union as suppliers of enrichment services. Do you have any comments on this reliance as it relates to the Soviets for the nuclear fuel?

Mr. **Badger**. Well, just one comment in general about the international marketplace. I think it is somewhat discomforting to NARUC to see what has transpired in the past 13 years that we have lost, essentially, to world market.

It would appear to us that national security reasons would suggest that we should not be placed in a position of depending on the international marketplace to provide enrichment services. So it is an area that I think we ought to attempt to re-establish the position of this country rather than encouraging a process that would take the domestic nuclear industry overseas to meet these kind of requirements.

Senator **Ford**. Very well stated. The bill that I have proposed provides liability for decontamination and decommissioning of uranium enrichment facilities between the parties that have benefitted from the use of those facilities. We do this based on the production of SWUs for each party. Do you think that this is an equitable approach for allocating liability?

Mr. **Badger**. Well, I will have to speak for myself in this, because NARUC has not, and has not addressed this. We will be happy to do it for you and come back with either correspondence as far as the position of NARUC. But, yes, I would respond in the affirmative that I think that is an appropriate responsibility that should be shared.

Senator **Ford**. One final question, I want to get something clear. Sometimes I get to thinking about other things or trying to get ahead of you and you are trying to answer a question. But I want to get back to one point. You said that we should not focus on a profit in the near term, but we should focus on increasing the enterprise's value, right?

Mr. **Badger**. Yes, sir.

Senator **Ford**. Good. Well, Commissioner, I thank you very much. You have been very helpful to us today and very informative. And it may be that we will ask you, representing your group, some questions that might develop.

And we will send those to you in writing and hope that you would respond to the committee in a timely fashion because, if you heard Senator Johnston a few moments ago, who is chairman of the full committee, he indicated that we would move expeditiously with this bill and think we are on the right track.

Mr. **Badger**. I would be happy to, Mr. Chairman.

Senator **Ford**. You are mighty nice and thank the young lady from your organization for coming and we appreciate her being here also.

Before I close today, I want to submit for the record a summary of the major provisions of Amendment 6 to S. 83.

We will recess today until May the 11th to have another hearing at that time. So this hearing is recessed.

[Whereupon, at 3:22 p.m., the hearing recessed, to reconvene Thursday, May 11, 1989.]

[The summary of major provisions of Amendment No. 6 to S. 83 follows:]

URANIUM ENRICHMENT ACT OF 1989
(AMENDMENT NO. 6 TO S. 83)
SUMMARY OF MAJOR PROVISIONS

- Establishes the United States Enrichment Corporation (USEC) as a wholly-owned government corporation for purposes of taking over the uranium enrichment enterprise operated by the Department of Energy.

- Makes USEC generally subject to the Government Corporation Control Act. This Act governs the formation of corporations where the provision of government services is characterized by a buyer-seller relationship. The USEC is an agency and instrumentality of the United States.

- Directs USEC to : (1) perform uranium enrichment and sell this service to the Department of Energy and qualified persons; (2) conduct research and development ; and (3) operate as a continuing, commercial enterprise on a profitable and efficient basis.

- Gives the direction of the USEC to an Administrator, appointed by the President, with the advice and consent of the Senate. The Administrator acts as CEO of the USEC, and is solely responsible for all aspects of the operations of the USEC, including setting the appropriate amount, and the payment of any dividends.

- Creates a five-member Advisory Board appointed by the President. The Board reviews and reports to the Administrator on the policies and performance of USEC.

- Transfers to USEC all DOE property related to uranium enrichment, except the Gaseous Diffusion Plant in Oak Ridge, Tennessee and facilities related to the Gas Centrifuge Enrichment Program. Facilities relating to the Advanced Laser Isotope Separation technology R&D program are not transferred, but USEC is provided access to them.

- Continues all utility enrichment service contracts and power purchase contracts according to contract terms.

- Issues capital stock to the Secretary of Treasury which represents an equity investment equal to the book value of assets transferred to the Corporation, as reported in the Uranium Enrichment Annual Report for Fiscal year 1987, modified to reflect continued depreciation and other usual changes that occur up to the date of transfer. This equity, approximately $3 billion of unrecovered government investment, is generally recovered through the depreciation component of price. The USEC is also required to pay the Treasury dividends on equity, when earned, as a return on the investment.

- Sets the initial debt of the USEC at $364 million and requires that this amount be recovered from enrichment customers with interest over 20 years.

- Gives USEC the authority to obtain $2.5 billion of private financing, which may be secured by the Corporation's revenues. This Act does not allow access to the Federal Financing Bank.

- Repeals section 161v. of the Atomic Energy Act and requires USEC to set prices for products, materials and services that recover, over the long term, the costs of performing and maintaining corporate functions including :

    - research and development
    - depreciation of assets
    - repayment of the initial $364 million debt and future borrowings
    - reasonable profit

- Removes various impediments to commercial operation such as requirements for divulging commercial business information and the use of unwieldy procurement practices.

- Initially exempts USEC from NRC licensing with respect to existing gaseous diffusion plants, but requires the NRC to promulgate licensing regulations for the plants within 4 years. USEC must apply for license as soon as practicable thereafter.

- Provides for sharing the cost of decontaminating and decommissioning uranium enrichment equipment between USEC and DOE on the basis of separative work that has been performed with the equipment under the ownership of each party. A fund is established to pay for commercial share of D&D of facilities transferred to USEC, with payments into the fund determined by the USEC.

- Requires a study of the feasibility of privatization five years after the enactment of the legislation, but Congress must pass separate legislation authorizing sale of the enterprise.

- Allows USEC to indemnify contractors under Price-Anderson Act.

- Exempts USEC from appropriations and apportionment, and prevents USEC from being subject to any sequestration order under Gramm-Rudman-Hollings.

THE NEED FOR URANIUM ENRICHMENT ENTERPRISE RESTRUCTURING AND URANIUM MINING REVITALIZATION

THURSDAY, MAY 11, 1989

U.S. Senate,
Subcommittee on Energy Research and Development,
Committee on Energy and Natural Resources,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:02 p.m., in room SD-366, Dirksen Senate Office Building, Hon. J. Bennett Johnston, chairman, presiding.

OPENING STATEMENT OF HON. J. BENNETT JOHNSTON, U.S. SENATOR FROM LOUISIANA

The Chairman. The hearing will come to order.

This afternoon we have a hearing on the status of the domestic uranium mining industry. This industry is important to our national economy and to our national security. It is an industry under transition, and the transition is painful. I know you will hear that pain described today. I hope we can also focus on solutions.

Since we visited this issue last year, much has changed. The one thing that has not changed is the difficult economic situation the uranium mining industry faces. But other things have changed. Canadian imports of uranium are now treated like domestic supplies under the Canadian Free Trade Agreement. Last year's uranium mining revitalization received a blue slip from the House. The Supreme Court has ruled against the miners on DOE's responsibilities with respect to the uranium mining industry under current law.

We need to take a new look at the situation not because we think the industry's prospects have improved, but because it is evident we need a new approach. I have urged the miners and their customers, the utilities, to work together to resolve as many problems as possible.

I would like to see these problems resolved outside the legislative arena. We need to move on Senator Ford's uranium enrichment corporation. The administration shares this sense of urgency. However, we have a long way to go in the House on the uranium enrichment corporation. We do not want to get uranium mining legislation confounded with enrichment. We must move on uranium enrichment this year.

There is foreign competition. It is a billion and a half dollar business which we could lose because of the foreign consortia in uranium enrichment, including the Soviet Union now, which could take that market away from us. And we simply cannot get uranium mining mixed up with that legislation. And I am sure Senator Ford and I would strongly oppose that.

Last year, as everyone knows, we moved on uranium mining. It was part of our legislation. I strongly supported it last year because I thought those American jobs were very, very important.

We all know what happened last year. We got not only the blue slip from the House, but strong opposition from the House. We had repeated meetings with House Members and their leadership in order to try to work it out, and we could not.

If the uranium mining industry has not improved, the prospects for passing that legislation in the House have also not improved, which is one of the reasons I strongly urge the miners and the industry to work together to try to resolve the problem outside of the legislative arena.

In any event, both Senator Ford and I have certainly shown our concern for and our desire to help the mining industry. And if we can find an appropriate formula to do so or through our urgings and importunities, if we can get it solved, we will certainly help to solve that problem. But the solution cannot involve, at least as far as I'm concerned, attaching it to uranium enrichment because uranium enrichment is ready to go.

I can't tell you all I know about uranium enrichment and what I know about the competition. Some of it is classified information. But I can tell you that we must move and move quickly this year in order to get that solved. Otherwise, we face the prospect of losing those markets.

[The prepared statement of Senator Johnston and the text of Amendment No. 10 follow:]

STATEMENT OF SENATOR J. BENNETT JOHNSTON

CHAIRMAN
COMMITTEE ON ENERGY AND NATURAL RESOURCES

HEARINGS ON THE DOMESTIC URANIUM MINING INDUSTRY

Subcommittee on Energy Research and Development

May 11, 1989

I AM GLAD TO BE AT THIS HEARING ON THE STATUS OF THE DOMESTIC URANIUM MINING INDUSTRY. THIS INDUSTRY IS IMPORTANT TO OUR NATIONAL ECONOMY AND TO OUR NATIONAL SECURITY. IT IS AN INDUSTRY UNDER TRANSITION, AND THE TRANSITION IS PAINFUL. I KNOW WE WILL HEAR THE PAIN DESCRIBED TODAY. I HOPE WE CAN ALSO FOCUS ON SOLUTIONS.

SINCE WE VISITED THIS ISSUE LAST YEAR MUCH HAS CHANGED. THE ONE THING THAT HAS NOT CHANGED IS THE DIFFICULT ECONOMIC SITUATION THE URANIUM MINING INDUSTRY FACES. BUT OTHER THINGS HAVE CHANGED. CANADIAN IMPORTS OF URANIUM ARE NOW TREATED LIKE DOMESTIC SUPPLIES UNDER THE CANADIAN FREE TRADE AGREEMENT. LAST YEAR'S URANIUM MINING REVITALIZATION LEGISLATION RECEIVED A BLUE SLIP FROM THE HOUSE. THE SUPREME COURT HAS RULED AGAINST THE MINERS ON DOE'S RESPONSIBILITIES WITH RESPECT TO THE URANIUM MINING INDUSTRY UNDER CURRENT LAW.

WE NEED TO TAKE A NEW LOOK AT THIS SITUATION. NOT BECAUSE WE THINK THE INDUSTRY'S PROSPECTS HAVE IMPROVED, BUT BECAUSE IT IS EVIDENT THAT WE NEED A NEW APPROACH. I HAVE URGED THE MINERS AND THEIR CUSTOMERS, THE UTILITIES, TO WORK TOGETHER TO RESOLVE AS MANY PROBLEMS AS POSSIBLE.

I WOULD LIKE TO SEE THESE PROBLEMS RESOLVED OUTSIDE THE LEGISLATIVE ARENA. WE NEED TO MOVE ON SENATOR FORD'S URANIUM ENRICHMENT CORPORATION. THE ADMINISTRATION SHARES THIS SENSE OF URGENCY. HOWEVER, WE HAVE A LONG WAY TO GO IN THE HOUSE ON THE URANIUM ENRICHMENT CORPORATION. WE CANNOT WAIT TO MOVE THIS LEGISLATION.

I INTEND TO MONITOR THE EFFORTS OF THE MINERS AND THE UTILITIES TO REACH ACCOMMODATION. I EXPECT THESE NEGOTIATIONS TO BE GOOD-FAITH NEGOTIATIONS. I WANT THEM TO SUCCEED. I DO NOT WANT TO SEE THE PROSPECTS FOR RESTRUCTURING THE URANIUM ENRICHMENT ENTERPRISE CLOUDED BY DISAGREEMENTS AMONG THE VERY GROUPS WHO STAND TO BENEFIT THE MOST FROM THIS RESTRUCTURING.

March 10, 1989

AMENDMENT NO. 10 Ex._________ Calendar No._________

Purpose: To provide for uranium revitalization and tailings reclamation.

IN THE SENATE OF THE UNITED STATES 101th Cong., 1st Session

S. 83

To establish the amount of costs of the Department of Energy's uranium enrichment program that have not previously been recovered from the enrichment customers in the charges of the Department of Energy to its customers.

Intended to be proposed by Mr. Domenici (for himself and MR. Bingaman, Simpson, Wallop, Garn and Hatch)

Viz:

At the end of the bill add the following:

"TITLE II -- URANIUM

"SUBTITLE A -- SHORT TITLE, DEFINITIONS, AND SAVINGS PROVISION

"SEC. 201. SHORT TITLE.

"This title may be cited as the 'Uranium Revitalization, Tailings Reclamation and Enrichment Act of 1988.'

"SEC. 202. DEFINITIONS.

"For purposes of subtitles A, B, and C of this title --

"(1) the term 'active site' means --

"(A) any uranium processing site, including the mill, containing by-product material for which a license (issued by the Nuclear Regulatory Commission or its predecessor agency under the Atomic Energy Act of 1954, as amended, or by a State as permitted under section 274 of such Act (42 U.S.C. 2021)) for the production at such site of any uranium derived from ore --

"(i) was in effect on January 1, 1978;

"(ii) was issued or renewed after January 1, 1978; or

"(iii) for which an application for renewal or issuance was pending on, or after January 1, 1978; and

"(B) any other real property or improvement on such real property that is determined by the Commission to be --

"(i) in the vicinity of such site; and

"(ii) contaminated with residual byproduct material;

"(2) the term 'active thorium site' means --

"(A) any thorium processing site, including the mill, containing by-product material for which a license (issued by the Nuclear Regulatory Commission or its predecessor agency under the Atomic Energy Act of 1954, as amended, or by a State as permitted under section 274 of such Act (42 U.S.C. 2021)) for the production at such site of any thorium derived from ore --

"(i) was in effect on January 1, 1978;

"(ii) was issued or renewed after January 1, 1978; or

"(iii) for which an application for renewal or issuance was pending on, or after January 1, 1978; and

"(B) any other real property or improvement on such real property that is determined by the Secretary to be --

"(i) in the vicinity of such site; and

"(ii) contaminated with residual byproduct material;

"(3) the term 'Administrator' means the Administrator of the Environmental Protection Agency;

"(4) the term 'byproduct material' has the meaning given such term in section 11(e)(2) of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2014(e)(2));

"(5) the term 'civilian nuclear power reactor' means any civilian nuclear powerplant required to be licensed under section 103 or section 104 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2133);

"(6) the term 'Commission' means the Nuclear Regulatory Commission;

"(7) the term 'Corporation' means the United States Enrichment Corporation;

"(8) the term 'Department' means the Department of Energy;

"(9) the term 'domestic uranium' means any uranium that has been mined in the United States including uranium recovered from uranium deposits in the United States by underground mining, open-pit mining, strip mining, in-situ recovery, leaching and ion recovery, or recovered from phosphoric acid manufactured in the United States;

"(10) the term 'domestic uranium producer' means a person or entity who produces domestic uranium and who has, to the extent required by State and Federal agencies having jurisdiction, licenses and permits for the operation, decontamination, decommissioning, and reclamation of sites, structures and equipment.

"(11) the term 'enrichment tails' means uranium in which the quantity of the U235 isotope has been depleted in the enrichment process.

"(12) the term 'overfeeding' means the use of natural uranium from stockpiles or inventories to produce enriched uranium when --

"(A) an enrichment services customer supplies less natural uranium than the amount actually used to produce its enriched uranium requirements; and

"(B) for purposes of achieving efficient operation of enrichment facilities, natural uranium from stockpiles or inventories is used to satisfy the shortfall in natural uranium supplied by such customer;

"(13) the term 'pre-production of enriched uranium' means the use at a given point in time of natural uranium from stockpiles or inventories to produce enriched uranium in excess of amounts required to satisfy then current obligations to provide enrichment services;

"(14) the term 'reclamation, decommissioning and other remedial action' includes long- and short-term monitoring, except for the purpose of determining the date when reclamation, decommissioning and other remedial action is complete for the purpose of making refunds under section 222. Such term shall include mill decommissioning only if the owner or licensee of an active site elects to make the contributions provided for in section 212(b)(1)(C);

"(15) the term 'Secretary' means the Secretary of Energy;

"(16) the terms 'source material' and 'special nuclear material' have the meanings given such terms in section 11 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2014); and

"(17) the term 'tailings' means the wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content.

SUBTITLE B -- URANIUM REVITALIZATION

"SEC. 210. REPEAL OF SECTIONS 161v. and 170B. --

"Sections 161v. and 170B of the Atomic Energy Act of 1954, as amended, are repealed and the remaining sections are relettered accordingly.

"SEC. 211. URANIUM REVITALIZATION FUND.

"(a) ESTABLISHMENT. -- There is hereby established in the Treasury of the United States a separate fund, to be known as the Uranium Revitalization Fund (referred to in subtitles A, B, and C of this title as the 'Fund'). The Fund shall consist of --

"(1) all contributions to the Fund from the States in which active sites are located as provided in section 212(a);

"(2) all contributions to the Fund from owners or licensees of active sites as provided in section 212(b);

"(3) all contributions to the Fund by the Corporation as provided in section 212(c);

"(4) all fees received from owners or operators of civilian nuclear power reactors as provided in section 212(d); and

"(5) all interest earned on sums in the Fund.

"(b) USE OF FUND. -- The Secretary shall make expenditures and reimbursements from the Fund only in accordance with subtitles B and C of this title.

"(c) ADMINISTRATION OF THE FUND. -- (1) The Secretary of the Treasury, after consultation with the Secretary, shall annually submit to the Congress a report on the financial condition and operation of the Fund during the preceding fiscal year.

"(2) The Secretary shall submit the budget of the Fund to the Office of Management and Budget annually along with the budget of the Department in accordance with chapter 11 of title 31, United States Code. The budget of the Fund shall consist of the estimates made by the Secretary of receipts by and expenditures and reimbursements from the Fund and other relevant financial matters for the succeeding three fiscal years, and shall be included in the Budget of the United States Government.

"(3) If the Secretary determines that the Fund contains at any time amounts in excess of current needs, the Secretary shall request the Secretary of the Treasury to invest such amounts, or any portion of such amounts as the Secretary determines to be appropriate, in obligations of the United States --

"(A) having maturities determined by the Secretary of the Treasury to be appropriate to the needs of the Fund; and

"(B) bearing interest at rates determined to be appropriate by the Secretary of Treasury, taking into consideration the current average market yield on outstanding marketable obligations of the United States with remaining periods of maturity comparable to the maturities of such investments, except that the interest rate on such investments shall not exceed the average interest rate applicable to existing borrowings.

"(4) Receipts, proceeds, and recoveries realized by the Secretary for the Fund under this title, and expenditures and reimbursements of amounts from the Fund, shall be exempt from annual apportionment under the provisions of subchapter II of chapter 15 of title 31, United States Code.

"(5) Receipts, proceeds and recoveries realized by the Secretary under this title shall be deposited in the Fund and shall be available until expended without further appropriations. For fiscal year 1989, total expenditures from the Fund shall not exceed total receipts, proceeds and recoveries.

"SEC. 212. CONTRIBUTIONS TO THE FUND

"(a) CONTRIBUTIONS BY STATES CONTAINING ACTIVE SITES. -- "(1) Each State containing an active site or sites may contribute from non-Federal funds to the Treasury of the United States to be deposited in the Fund the sum of $0.10 for each dry ton of tailings at an active site within such State listed in section 220(d)(1) whose owner or licensee has elected to participate in reclamation, decommissioning and other remedial action through the Fund as determined under section 221.

"(2) Such payment shall be made in five equal annual installments commencing January 1, 1990.

"(3) If any State containing an active site or sites, whose owner or licensee has elected to participate in reclamation, decommissioning and other remedial action through the Fund, fails or refuses to make the contributions, or any portion thereof, such failure or refusal shall not affect the right of the owner or licensee of an active site in such State to participate in reclamation, decommissioning and other remedial action through the Fund.

"(b) CONTRIBUTIONS BY OWNERS OR LICENSEES OF ACTIVE SITES. --

(1) Each owner or licensee of an active site listed in section 220(d)(1) who elects to participate in reclamation, decommissioning and other remedial action, through the Fund

shall contribute to the Treasury of the United States, to be deposited in the Fund, for each such site as to which it is the owner or licensee

"(A) $2,000,000 per site, of which,

"(i) $1,000,000 shall be contributed on or before January 31, 1990; and

"(ii) $1,000,000 shall be contributed on or before January 31, 1991;

"(B) $1 per dry ton for all tons of tailings at such active site, the uranium from which was processed for commercial sales prior to the effective date of the Act, of which --

"(i) $0.50 per dry ton for all tons of tailings at such active site, the uranium from which was processed for commercial sales prior to the effective date of this Act, shall be contributed on or before January 31, 1992; and

"(ii) $0.50 per dry ton for all tons of tailings at such active site, the uranium from which was processed for commercial sales prior to the effective date of this Act, shall be contributed on or before January 31, 1993; and

"(C) an additional $500,000 to be paid on or before January 31, 1994 if the owner or licensee elects to decommission the mill at such site as a part of the reclamation, decommissioning and other remedial action.

"(c) CONTRIBUTIONS BY THE CORPORATION. -- The Corporation shall contribute to the Treasury of the United States, to be deposited in the Fund, the total of $450 million. The sum of $90 million shall be deposited in the Fund on December 15, 1989 and the remaining $360 million deposited in the Fund in equal annual installments beginning December 15, 1990 and each December 15 thereafter through December 15, 1993.

"(d) CONTRIBUTIONS BY LICENSEES OF CIVILIAN NUCLEAR POWER REACTORS. -- (1) Licensees for civilian nuclear power reactors shall contribute to the Treasury of the United States, to be deposited in the Fund, the sum of $1 billion. The contribution shall be derived from a fee of $72.00 per kilogram of uranium contained in fuel assemblies initially loaded into each civilian nuclear power reactor during each of the calendar years beginning with January 1, 1988 and paid until the $1 billion is contributed to the Fund. In the year that the $72 per kilogram fee would result in the total contribution to the Fund exceeding $1 billion, the fee for that year shall be reduced on a pro-rata basis to each licensee so that the total contribution to the Fund under this section will not exceed $1 billion.

"(2) The $72 per kilogram fee provided under paragraph (1) shall apply to fuel on its initial loading into the reactor and not to previously loaded fuel being loaded again; Provided, That the fee shall only be charged for one third of the total kilograms of uranium contained in the first core loading of a new reactor. In calculating the total annual obligation by a licensee, fuel loaded in loadings during refueling outages that begin in one calendar year and are completed in the subsequent year may be deemed to have occurred in either year but not both. Fees paid pursuant to paragraph (1) shall be considered as a component of fuel cost for accounting and regulatory purposes.

"(3) The fee from each user so affected will be due on January 31 the following year with the first such payment due on January 31, 1989.

"(4) The contribution of this fee shall constitute the total obligation of licensees of civilian nuclear power reactors for uranium revitalization and mill tailings reclamation, except to the extent that a licensee of a civilian nuclear power reactor may be the owner or licensee of a uranium mill or as provided by contract executed prior to the effective date of this Act.

"(5) Not later than ninety days after the date of enactment of this Act the Secretary shall establish procedures for the collection and payment of the fee established by this subtitle.

"SEC. 213. MAINTENANCE OF FUND BALANCE.

"The Secretary shall manage expenditures and disbursements from the Fund such that it never is in a deficit on a cash basis. Priority of expenditures and disbursements from the Fund shall be given to the purchase of domestic uranium under sections 214 and 215 of this title. Reimbursements to owners or licensees of active sites for reclamation, decommissioning and other remedial action may be delayed until receipts allow disbursements. In such cases, owners or licensees of active sites will be treated pro-rata where only partial reimbursements can be made.

"SEC. 214. EARLY PURCHASE PROGRAM.

"(a) The Secretary shall obligate from the Fund the sum of $80 million dollars in approximately equal quarterly installments in calendar year 1989 to purchase domestic uranium from small domestic uranium producers.

"(b) The purchase process shall be accomplished using the same competitive bidding system as established in subsections (c) and (d) of section 215.

"(c) For the purpose of this section, a small domestic uranium producer is a domestic uranium producer with net assets of less than $200 million as of the date bids are submitted. The net assets of a domestic producer shall be determined in conformity with generally accepted accounting principles on a consolidated basis and shall include the assets and liabilities of affiliated companies, as determined in the manner the Secretary provides in regulations. The domestic uranium producer shall certify that it is an eligible small domestic uranium producer, as defined in such regulations, as of the date bids are submitted.

"(d) The domestic uranium delivered under this section shall be:

"(1) domestic uranium actually produced by the small domestic uranium producer after the enactment of this Act, or

"(2) domestic uranium actually produced by the small domestic uranium producer before the enactment of this Act and held by it without sale, transfer or redesignation of the national origin of such uranium on a DOE/NRC form 741.

"(e) In the event that the $80 million provided for purchases of domestic uranium under this section is not fully obligated, any amounts remaining shall be used for purchases of domestic uranium under section 215 of this title. Such amounts shall be in addition to the amounts provided in section 215.

"SEC. 215. DEMAND ENHANCEMENT.

"(a) COMMITMENT. -- The Secretary shall obligate from the Fund the following amounts per calendar year to purchase domestic uranium:

Calendar Year	Expenditures
1989 (fourth quarter)	$ 80,000,000
1990	$150,000,000
1991	$140,000,000
1992	$130,000,000
1993	$120,000,000
1994	$ 50,000,000

"(b) TIMING OF SOLICITATIONS OF BIDS TO SELL. -- Solicitations of bids to sell domestic uranium under this section shall begin on October 15, 1989 and shall be made quarterly so as to obligate approximately equal amounts out of each annual amount provided in subsection (a).

"(c) DELIVERIES. -- Deliveries of the domestic uranium purchased by the Secretary shall be made in accordance with customary uranium industry practice to locations specified by the Corporation through the Secretary, and payment shall be made within thirty days after delivery.

"(d) COMPETITION. -- Purchases of domestic uranium by the Secretary shall be accomplished using a competitive bidding system. The Secretary shall implement a bidding system which the Secretary determines to be appropriate. Purchases of domestic uranium by the Secretary shall be restricted to quantities deliverable within not more than twelve months of the contract award.

"(e) ELIGIBLE BIDS. -- (1) Bidding shall be restricted to domestic uranium meeting one or more of the following criteria:

"(A) domestic uranium actually produced by a domestic uranium producer after the enactment of this Act;

"(B) domestic uranium actually produced by a domestic uranium producer before the enactment of this Act and held by it without sale, transfer or redesignation of the origin of such uranium on a DOE/NRC form 741;

"(C) domestic uranium returned to a domestic uranium producer pursuant to the settlement or final order of a lawsuit initiated prior to May 26, 1988; or

"(D) domestic uranium purchased by a domestic producer prior to January 1, 1988, to the extent that an equal amount of domestic uranium has been produced by such producer after January 1, 1988.

"(2) Contract awards under this section shall be limited to one million pounds of domestic uranium per domestic uranium producer per calendar year, subject to waiver if in the judgment of the Secretary it appears unlikely that the entire amount provided during a calendar year by subsection (a) will be obligated during that calendar year.

"(3) In the event that the entire amount provided during a calendar year by subsection (a) is not obligated during that calendar year, the unobligated balance shall be carried forward and added to subsequent monthly purchase obligations until the total amount of the Fund available for domestic purchases is expended.

"(4) Domestic producers that submit bids under this section or section 214 shall certify that the uranium to be delivered is eligible under paragraph (1) or subsection 214(d) as appropriate. The Secretary may impose penalties up to three times the bid price against any person or entity that knowingly submits a false certification.

"SEC. 216. PROMOTION OF EXPORT OF DOMESTIC ORIGIN URANIUM.

"(a) ENCOURAGE EXPORT. -- The Department, with the cooperation of the Department of Commerce, the United States Trade Representative and other governmental organizations, shall encourage the export of domestic uranium.

"(b) IMPLEMENTATION. -- Within one hundred and eighty days of the date of the enactment of this Act, the Secretary shall develop recommendations and implement government programs to promote the export of domestic uranium. The Secretary shall report annually to the Senate Committee on Energy and Natural Resources and the appropriate House Committees on the progress of government programs to promote the export of domestic uranium.

"SEC. 217. CERTIFICATION.

"(a) REACTORS. -- The owner or operator of any civilian nuclear power reactor shall certify to the Secretary by January 31 of each year beginning January 31, 1989, and ending when the $1 billion has been contributed to the Fund as specified in section 212(d)(1), the total weight of uranium in new fuel assemblies loaded during such year.

"SEC. 218. OWNERSHIP OF PURCHASED URANIUM AND RESTRICTIONS ON USE OF URANIUM AND ENRICHMENT TAILS.

"(a) GOVERNMENT URANIUM. -- The use of natural uranium contained in stockpiles or inventories owned by the Department as of the date of enactment of this title, including its agencies and instrumentalities, shall be restricted to military purposes, Government research, working inventory for purposes of enrichment, overfeeding and preproduction of enriched uranium by the Corporation. In no event shall such use decrease the demand for natural uranium by United States utilities in comparison to the demand that would exist in the absence of such use. The United States, its agencies and instrumentalities shall not sell natural uranium contained in stockpiles or inventories owned by the Department as of the date of enactment of this title.

"(b) URANIUM PURCHASES UNDER THIS SUBTITLE. -- All natural uranium purchased under sections 214 and 215 of this subtitle shall be the property of the Corporation without need for payment other than the contribution required under section 212(c). The use of such uranium shall be restricted to overfeeding and preproduction of enriched uranium by the Corporation. In no event shall such use decrease the demand for natural uranium by United States utilities in comparison to the demand that would exist in the absence of such use.

"(c) ENRICHMENT TAILS. —The Corporation may use or recycle available enrichment tails only for military purposes or for purposes of replacing uranium provided by the Corporation's enrichment customers which was previously used in overfeeding. In no event shall the Corporation or the Federal government use or recycle enrichment tails in such a manner as to decrease the demand for natural uranium by United States utilities in comparison to the demand that would exist in the absence of such use or recycling.

"SEC. 219. SECRETARY'S AUTHORITY TO MAKE REGULATIONS. -- The Secretary shall issue appropriate regulations to accomplish the purposes of this subtitle.

"SUBTITLE C — REMEDIAL ACTION PERFORMED BY THE OWNER OR LICENSEE OF ACTIVE SITES.

"SEC. 220. REMEDIAL ACTION.

"(a) IN GENERAL. — The owner or licensee of an active site shall select and perform reclamation, decommissioning, and other remedial actions, at active sites.

"(b) REMEDIAL ACTION TO BE PERFORMED IN ACCORDANCE WITH APPLICABLE STANDARDS. — Any reclamation, decommissioning or other remedial action performed under subsection (a) by an owner or licensee shall comply with all applicable requirements established pursuant to the Uranium Mill Tailings Radiation Control Act of 1978, as amended, or where appropriate, with requirements established by a State that is a party to a discontinuance agreement under section 274 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2021).

"(c) COSTS OF REMEDIAL ACTION TO BE PAID FROM URANIUM REVITALIZATION FUND. -- The costs incurred by the owner or licensee who has elected to participate under section 221 for reclamation, decommissioning and other remedial action, performed by the owner or licensee under this subtitle shall be reimbursed under sections 222, 223, and 224 from the Fund established in section 211.

"(d) LIST OF SITES AND TAILING DETERMINATION. -- (1) The following active sites qualify for reimbursement from the Fund in accordance with the terms of this subtitle:

SITE	ESTIMATED TONS OF MILL TAILINGS July 1, 1985
Cotter - Cannon City Mill, Cannon City, CO	2,200,000
UMETCO - Uravan Mill Uravan, CO	10,300,000
Sohio Western - L-Bar Mill, Seboyeta, NM	2,100,000
United Nuclear - Churchrock Mill, Churchrock, NM	3,500,000
Anaconda - Bluewater Mill, Grants, NM	23,600,000
Quivera Mining - Ambrosia Lake Mill, Grants, NM	33,000,000
Homestake - Grants Mill, Grants, NM	21,800,000
Conoco - Pioneer Nuclear, Conquista Project, Falls City, TX	8,800,000
Chevron Resources - Panna Maria Mill, Hobson, TX	4,600,000
Exxon - Felder Facility, Three Rivers, Texas	400,000
Rio Algom - Lisbon Mill, Moab, UT	3,000,000
Atlas - Moab Mill, Moab, UT	10,500,000
Dawn - Ford Mill, Ford, WA	3,000,000
Western Nuclear - Sherwood Mill, Wellpinit, WA	2,900,000
American Nuclear - Gas Hills Mill, Riverton, WY	5,900,000

Pathfinder - Lucky McMill, Riverton, WY	9,500,000
Western Nuclear - Split Rock Mill, Jeffrey City, WY	7,700,000
UMETCO - East Gas Hills Mill, Riverton, WY	9,200,000
Exxon - Highland Mill, Douglas, WY	7,200,000
Rocky Mountain Energy - Bear Creek Mill, Douglas, WY	5,000,000
Pathfinder - Shirley Basin Mill, Shirley Basin, WY	5,800,000
Petrotomics - Shirley Basin Mill, Shirley Basin, WY	6,300,000
Energy Fuels/UMETCO - White Mesa Mill, Blanding, UT	1,900,000
Minerals Exploration - Red Desert, Rawlins, WY	1,000,000
UMETCO - Maybell, Maybell, CO	2,000,000
Tennessee Valley Authority Edgemont, SD	2,000,000

"(2) Within one hundred and eighty days of the date of enactment of this title the Secretary shall determine the actual amounts of mill tailings at each of the active sites listed in paragraph (1) on the date of enactment of this title.

"(3) No reimbursement under this subtitle shall be made for the reclamation, decommissioning and other remedial action performed for an active site not listed in paragraph (1) or for reclamation, decommissioning and other remedial action of mill tailings at a listed active site in excess of the actual amount of tailings determined by the Secretary under paragraph (2).

"SEC. 221. ELECTION TO PARTICIPATE.

"The owner or licensee of an active site listed in section 220(d)(1) may elect to perform reclamation, decommissioning and other remedial action through the Fund and be entitled to receive reimbursement under this subtitle for the cost incurred by such owner or licensee for reclamation, decommissioning and other remedial action performed in connection with the owner's or licensee's active site by notifying the Secretary of such election on or before January 1, 1990. If an owner or licensee makes an election to participate, the notice shall specify whether the owner or licensee elects to have decommissioning undertaken pursuant to the Fund. Such election to participate or not to participate shall be irrevocable.

"SEC. 222. REIMBURSEMENT OF COSTS INCURRED FOR RECLAMATION, DECOMMISSIONING OR OTHER REMEDIAL ACTION FROM FUND.

"(a) IN GENERAL -- The Secretary shall make reimbursement from the Fund to the owner or licensee of an active site listed in section 220(d)(1) who has elected to participate as provided in section 221, the costs incurred by such owner or licensee for the reclamation, decommissioning and other remedial actions in connection with such site as follows:

"(1) From the contributions made to the Fund by the Corporation as provided in section 212(c), by the States as provided in section 212(a), and by the licensees of civilian nuclear power reactors as provided in section 212(d), plus the interest earned upon such contributions, the owner or licensee of an active site shall be reimbursed an amount equal to two-thirds of the total cost of reclamation, decommissioning, and other remedial action at such site.

"(2)(A) From the contributions made by the owner or licensee of such active site plus the interest earned thereon, such owner or licensee shall be reimbursed one-third of the cost of reclamation, decommissioning and other remedial action at such site.

"(B) Notwithstanding (A), if the contributions made by the owner or licensee of such active site plus interest earned thereon exceed one-third of the cost of reclamation, decommissioning and other remedial action at such site, such excess shall be refunded to such owner or licensee. The payment of such excess shall be considered a refund and not reimbursement. If the contributions made or to be made by the owner or operator of such active site, plus interest earned thereon, is less than one-third of the cost of reclamation, decommissioning and other remedial action at such site, then the amount by which one-third of the cost of reclamation, decommissioning and other remedial action at such site exceeds the amount of contributions made by the owner or licensee of such active site plus interest earned thereon, shall be borne by the owner or licensee thereof.

"(3) Notwithstanding paragraphs (1) and (2), the owner or licensee of an active site shall also bear, and not be reimbursed for, any amount by which the cost of reclamation, decommissioning and other remedial action at such site exceeds a sum equal to $4.50 multiplied by the dry tons of tailings at such site as determined under section 220(d)(2).

"(4) Before an owner or licensee of an active site elects to participate as provided in Section 221, the owner or licensee shall dismiss, with prejudice, any pending action it has against the United States for reclamation, decommissioning and other remedial action at active sites covered by this title, or withdraw with prejudice its participation in such an action.

"(5) The successor to the owner or licensee of an active site (other than the United States or agency thereof or a State as provided by law) shall be entitled to credit for contributions made by its predecessor and interest earned thereon and be entitled to receive any reimbursements or refunds.

"(b) OWNER'S OR LICENSEE'S ACCOUNT. -- The Secretary shall maintain accounts for each participating owner or licensee to reflect contributions by such owner or licensee, interest deemed earned on such contributions, reimbursements to such owner or licensee from the Fund, and the cost incurred by the owner or licensee for the reclamation, decommissioning or other remedial action in connection with such active site.

"(c) ACCOUNTS FOR OTHER CONTRIBUTORS TO THE FUND. -- (1)(A) For the purpose of accounting, two-thirds of the costs incurred by participating owners or licensees at active sites, up to the maximum of $4.50 per dry ton of tailings at such sites as of the effective date of this Act (such two-thirds being $3 per dry ton based upon $4.50 per dry ton of tailings), shall be deemed to have been reimbursed from the Fund out of the portion of the Fund contributed:

"(i) by or on behalf of the Corporation as provided in section 212(c);

"(ii) by the States which have contributed as provided in section 212(a);

"(iii) by the licensees of civilian nuclear power reactors as provided in section 212(d);

and from interest deemed earned upon such contributions.

"(B) The Secretary shall maintain accounts for each such person or entity making contributions to the Fund, reflecting the date and amount of such contributions, and the interest deemed earned thereon.

"(2) The Secretary shall determine as of January 31, 1994, whether the amount remaining in the Fund (other than the amounts contributed by participating owners or licensees of active sites and interest deemed earned thereon) when considered with the $4.50 per dry ton limit on reimbursement exceeds the total cost reimbursable to the participating owners or licensees of active sites (other than that deemed reimbursed out of such participating owners' or licensees' contributions and interest deemed earned thereon or to be borne by owners or licensees), where reclamation, decommissioning and other remedial action has not been completed.

"(3) If the Secretary determines there is an excess, then the excess shall be refunded as set forth in subsection (d); **Provided**, however, that no amounts contributed to the Fund by the participating owners or licensees of active sites and interest deemed earned thereon shall be refunded to any person or entity other than the owner or licensee making such contribution, or their successors or assigns.

"(d) REFUNDS TO CERTAIN CONTRIBUTORS. -- The Secretary shall make a determination annually after January 31, 1994, whether an excess as calculated pursuant to subsection (c) exists in the Fund. If, as of January 31, 1994, and each January 31 thereafter, the Secretary determines that the Fund contains an excess as calculated in subsection (c), then the Secretary shall refund or use the excess in the following order:

"(1) the Secretary shall refund the excess to the States which have made contributions to the Fund as provided in section 212(a), until such States have been refunded the full amount of their contributions;

"(2) up to $100 million shall be used for the purchase of domestic uranium as described in section 215; and

"(3) the remaining excess, if any, shall be refunded to the licensees of civilian power reactors.

"(e) INTEREST DEEMED EARNED. -- For the purposes of this subtitle, the contributions made by any person or entity shall be deemed to have earned interest annually on the contribution from the date made. The appropriate interest rate for each year shall be determined by the Secretary, taking into consideration the average market yield on outstanding marketable obligations of the United States with one year maturity during the year for which calculation is being made; _Provided, however, that contributions made by any participating owners or licensees of active sites shall be deemed to bear interest during any such year only to the extent that the contributions made by such owner or licensee exceed one-third of the costs reimbursed out of the Fund to such owner or licensee up to such time.

"SEC. 223. LIMITATION OF REIMBURSEMENT.

"(a) $4.50 PER TON LIMIT. -- The total reimbursement from the Fund to the owner or licensee of an active site shall not exceed an amount equal to $4.50 multiplied by the dry tons of tailings located at the site as of the effective date of this subtitle, as determined in accordance with the requirements of section 220(d). Costs in excess of $4.50 per ton shall be borne by the owner or licensee of the active site on its own account outside the Fund.

"(b) INFLATION ESCALATION INDEX. -- The $4.50 per dry ton multiplier provided in subsection (a) shall be increased annually based upon an inflation escalation index. The Secretary shall determine the appropriate index to apply.

"SEC. 224. TAILINGS GENERATED AFTER THE DATE OF THE ENACTMENT OF THE TITLE.

"(a) IN GENERAL. -- An owner or licensee of an active site who has elected to participate pursuant to section 220 shall be entitled to reimbursement from the Fund to the limits provided, for the costs incurred for the reclamation, decommissioning and other remedial action in connection with such active site on the basis of tailings existing at such active site as of the date of enactment of this title. The participating owner or licensee of an active site shall be responsible on its own account outside the Fund for the costs incurred for the reclamation, decommissioning and other remedial action associated with tailings generated at such active site after the date of the enactment of this title.

"(b) ACTIVE SITES CONTAINING TAILINGS GENERATED BEFORE AND AFTER THE DATE OF ENACTMENT OF THIS TITLE. -- If an active site whose owner or licensee has elected to participate contains tailings generated both before and after the date of the enactment of this title, then it shall be assumed that the costs incurred by the owner or licensee for the reclamation, decommissioning and other remedial action in connection with such site were incurred pro-rata based upon the dry tons of tailings generated before and after the date of the enactment as determined on the basis of the Secretary's findings under section 220(d)(2), unless the Secretary determines that the costs incurred in connection with the tailings generated after the date were less than would result from the pro-rata formula, in which event such lower amount shall be used for the purpose hereof.

"SEC. 225. THORIUM SITES.

"(a) IN GENERAL. -- The cost of reclamation, decommissioning, and other remedial action at active thorium sites shall be borne by the licensee or owner, subject to reimbursement by the United States for a portion of the costs at any such sites if tailings at the site were generated as an incident of sales to the United States or any of its agencies and instrumentalities. The portion of the costs to be allocated to the United States shall be determined by the ratio of the volume of tailings that were generated as an incident of sales to the United States, or any of its agencies and instrumentalities, to the total volume of tailings at the site. Owners or licensees shall decide by January 1, 1989, whether they have tailings subject to Federal reimbursement and so notify the Secretary. Subject to such notification and confirmation of the existence of tailings eligible for reimbursement as described above, the Secretary shall enter into a cooperative agreement with the owner or licensee of the site providing for the payment by the United States of its portion of the cost of reclamation, decommissioning and other remedial action.

"(b) AUTHORIZATION OF APPROPRIATIONS. -- For the purpose of carrying out the provisions of this section, such funds as necessary are hereby authorized to be appropriated.

"SEC. 226. INTEREST ON COSTS INCURRED.

"Reimbursement from the Fund for costs incurred shall include interest at the rate provided in section 222(e) on costs incurred by the participating owner or licensee of an active site from the date a statement for reimbursement of such cost is submitted by the owner or licensee to the Secretary until reimbursement for such cost is made from the Fund.

"SEC. 227. LIMITATION OF FINANCIAL OBLIGATIONS.

"The contributions made and work performed by the owners or licensees of the active sites shall be the sole liability and obligation imposed under Federal laws in connection with the reclamation, decommissioning and other remedial action at active uranium and thorium sites; Provided, however, that nothing herein contained shall affect the obligation of every owner or licensee to provide for such long-term care or other reclamation requirements (including financial requirements) as are provided in the Uranium Mill Tailings Radiation Control Act of 1978, as amended, the regulations of the Commission thereunder, and the regulations of the Environmental Protection Agency thereunder. The financial requirements provided in the Commission's regulations under the Uranium Mill Tailings Radiation Control Act of 1978, as amended, as of the date of enactment of this Act shall remain in effect until the Commission has promulgated regulations implementing this subtitle.

"SEC. 228. RECLAMATION ALREADY UNDERTAKEN.

"The owner or licensee of a participating active site who has undertaken reclamation, decommissioning or other remedial action at such site prior to the date of the enactment of this title shall be entitled to reimbursement for the cost thereof as if the work was done after such date if such work, including disposal work, was accomplished in order to comply with the standards under section 220(b). The timing of such reimbursement shall be subject to the management of the Fund as specified in section 213. An owner or licensee of an active site which has elected to participate in the Fund and has performed reclamation work prior to the effective date of enactment of this Act may have any sums to which it is entitled to be reimbursed credited against any sums it is required to contribute. The Commission shall determine whether work performed at a site prior to the enactment of this title was accomplished in order to comply with the standards under section 220(b) and advise the Secretary accordingly.

"SEC. 229. SECRETARY'S AUTHORITY TO MAKE REGULATIONS AND REIMBURSEMENTS.

"The Secretary shall adopt and issue appropriate regulations to accomplish the purposes of this title and shall review statements by participating owners or licensees for reimbursement from the Fund of costs incurred for reclamation, decommissioning and other remedial actions. Any such statement for reimbursement found appropriate shall be approved by the Secretary and reimbursement therefore shall be made from the Fund.

"SEC. 229. STANDARDS AND INSTRUCTIONS FOR BONDING, SURETY, OR OTHER FINANCIAL ARRANGEMENTS, INCLUDING OR OTHER PERFORMANCE BONDS.

"Section 161x. of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2201x.), is amended by inserting after the word 'ensure' in the matter preceding paragraph (1) a comma and the following: 'for the share of costs for which the licensee is responsible'.

"SEC. 230. PAYMENTS TO URANIUM REVITALIZATION FUND.

"The Secretary, or the United States Enrichment Corporation, as the case may be, shall make annual payments to the Uranium Revialization Fund of $90 million for five years, for a total of $450 million. Of each $90 million payment, $60 million shall be credited against payments owned to the Treasury on the initial debt.".

The CHAIRMAN. Now, Senator Simpson is on his way to testify, but pending his arrival, I would like to start with the first witness and interrupt that testimony, if I may, when Senator Simpson arrives. So, if we may begin with a panel with the Honorable Helmut Merklein, the Administrator of the Energy Information Administration, and Philip G. Sewell, Deputy Assistant Secretary for Uranium Enrichment of the Department of Energy. And we will have Senator Simpson come and take a seat when he arrives and interrupt, if I may.

So, Dr. Merklein, if you would begin. We want to welcome you to the committee.

STATEMENT OF DR. HELMUT A. MERKLEIN, ADMINISTRATOR, ENERGY INFORMATION ADMINISTRATION, DEPARTMENT OF ENERGY, ACCOMPANIED BY JOHN C. GEIDL, DIRECTOR, OFFICE OF COAL, NUCLEAR, ELECTRIC AND ALTERNATE FUELS, AND HOWARD L. WALTON, DIRECTOR, NUCLEAR AND ALTERNATE FUELS DIVISION

Dr. MERKLEIN. Thank you, Mr. Chairman. I am pleased to be here this afternoon. With me on my left is Mr. John Geidl. He is the Director of the Office of Coal, Nuclear, Electric and Alternate Fuels, and on my right, Mr. Howard Walton, Director of the Nuclear and Alternate Fuels Division of the Energy Information Administration.

My written testimony has been submitted earlier, and I request it be entered into the record.

The CHAIRMAN. Your testimony, as well as all other witnesses' written testimony, will be fully put into the record.

Dr. MERKLEIN. Thank you.

In summarizing my statement, allow me to address what I perceive your concerns to be as regards EIA's role in collecting import data on nuclear material.

During this committee's April 19 hearing on S. 83, Senator Domenici expressed particular concern with imported Soviet nuclear material and the ability of EIA to require utilities to document the origins of their uranium under its data collection authority. Our data show that during the 1980s imports grew from 3.6 million pounds of U308 equivalent in 1980 to an estimated 14.3 million pounds in 1988. At the same time, exports have declined from 5.8 million to 1 million pounds. The U.S. dependence on imports has increased to 51 and 46 percent of domestic utility requirements in 1987 and 1988, respectively.

Additionally, spot and average prices and domestic uranium production have been on the decline since 1980. Domestic uranium concentrate production has declined from a peak of 44 million pounds in 1980 to 13 million in 1988.

Using our Form EIA-858, we keep track of various types of nuclear material. All firms engaged in domestic uranium raw materials and uranium marketing activities, including purchases, sales, and ownership of ore reserves, natural U308, natural UF6 and enriched uranium are surveyed. These data are collected on our Form EIA-858, as I mentioned, under a pledge of confidentiality. They are aggregated and then published in two reports. The *Uranium*

Industry Annual presents a statistical profile of the U.S. uranium industry. The *Domestic Uranium Mining and Milling Industry: Viability Assessment* provides the Secretary of Energy with basic data and analyses for his annual determination of the viability of the domestic industry.

It should be noted that the data on Form EIA-858 represent the facts as reported by the respondents. With regard to imports of natural uranium materials, this report may not account for some of the nationality swaps of material and other multiple transactions that lead to the sales finally consummated between the seller and the respondent utility. Therefore, the data regarding country of origin may not be fully representative of the transaction process or the original source of the natural uranium material that made the transaction possible.

A claim of similar behavior concerning flag swaps may be made with regard to imported enriched materials. However, our investigation so far has not revealed a single instance in which undocumented USSR enriched material has been imported to the U.S. As a result, we are reasonably confident that all USSR enriched material entering the United States is clearly identified. We are continuing our investigation and should have preliminary results in hand in about a month.

This is not to say that USSR enriched material does not enter the world markets where it impacts this country's enrichment in natural uranium markets. In fact, there is reason to believe that considerable inventory swapping is occurring overseas. The uranium enriched in the USSR is being shipped to foreign and domestic utilities where it is either used for fuel fabrication or placed in inventories. When it goes into foreign utility inventories, it can dislodge non-USSR enriched UF6 that subsequently finds its way into the United States. However, when it goes to foreign utilities that have unfulfilled requirements, it removes a segment of demand from the market otherwise expected to be met by traditional western world suppliers.

Form EIA-858 also collects the amount of natural uranium which may be of U.S. or foreign origin that is shipped by a United States utility to a foreign enrichment supplier. However, the foreign enricher is not identified.

In the case of U.S. origin material shipped abroad for enrichment, its return to the United States after enrichment would not be counted as an import. If the natural uranium is shipped to a foreign enricher, and if it was of foreign origin—example, from China—it would be counted as an import of natural, i.e., Chinese, rather than enriched uranium.

In summary, the EIA is diligently pursuing an answer to the question of how much uranium enriched in the USSR has entered the United States. As mentioned, we expect to complete our initial review of all available data on this subject in about a month. We will be glad to provide you with the results of our investigation upon its completion.

This, Mr. Chairman, concludes my testimony. I would be happy to address any questions you might have. Thank you.

[The prepared statement of Dr. Merklein follows:]

STATEMENT OF THE HONORABLE HELMUT A. MERKLEIN

ADMINISTRATOR, ENERGY INFORMATION ADMINISTRATION

U. S. DEPARTMENT OF ENERGY

BEFORE THE

UNITED STATES SENATE

COMMITTEE ON ENERGY AND NATURAL RESOURCES

SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT

MAY 11, 1989

I am pleased to be here this afternoon to discuss the data collected by the Energy Information Administration (EIA) that may be relevant to proposed Senate amendment 10 to S. 83, "Uranium Revitalization Tailings Reclamation and Enrichment Act." EIA collects data on uranium marketing activities including imports of uranium. The level of uranium imports is one of the factors in determining the viability of the domestic uranium mining and milling industry and, therefore, relevant to any discussion on revitalization of the uranium industry.

Let me first provide a brief history of uranium export and import data. For the period from 1966 through 1974, the United States prohibited the enrichment of non-U.S. origin uranium for domestic end use. From 1975 through 1983, the restrictions were phased out. Imports then amounted to a very small portion of total domestic requirements, and U.S. exports actually exceeded imports for each year from 1978 through 1980. During the 1980's imports grew from 3.6 million pounds of U308-equivalent in 1980 to 14.3 million pounds in 1988. At the same time exports have decreased from 5.8 to 1.0 million pounds. The U.S. dependence on imports has increased to 51 and 46 percent of domestic utility requirements in 1987 and 1988, respectively. Additionally, spot and average prices, and domestic uranium production have been on the decline since 1980. Domestic uranium concentrate production has declined from a peak of 44 million pounds in 1980 to 13 million pounds in 1988.

These changes as well as others such as the decrease in demand in the uranium market, beginning in the early 1980's led to amendments to the Atomic Energy Act in January 1983. These amendments required the Secretary of Energy to establish criteria by which the viability of the domestic uranium mining and milling industry should be determined. Additionally, the Secretary was required to make an annual determination of the industry's viability for the period from 1983 through 1992 based on these criteria.

Four evaluation criteria were promulgated by rule in October 1983. The four criteria are resource capability, supply response capability, financial capability, and import commitment dependency. Using these criteria, the Secretary of Energy determined that the domestic mining and milling industry was not viable in the years 1984 through 1987.

A criterion of considerable interest for this hearing is import commitment dependency, which measures whether executed firm or optional contracts for foreign origin source material or special nuclear material represent more than 37.5 percent of actual or projected domestic requirements for any two-consecutive-year period. Imports were greater than 37.5 percent of domestic requirements in 1986 and 1987, and for that reason the Secretary of Energy requested the Secretary of Commerce, pursuant to 19 U.S.C. 1862, to conduct a study of the national security implications of that level of imports. We have been advised that the Secretary of Commerce is scheduled to report his findings in

September. Throughout the rest of the century, projected imports are expected to be more than 50 percent of domestic utility uranium requirements.

To measure the level of import commitment dependency, the EIA annually collects information under the authority of the Atomic Energy Act of 1954, as amended by section 23 of the Nuclear Regulatory Commission Authorization Act of 1983 (Public Law 97-415), and section 13 of the Federal Energy Administration Act of 1974, as amended (Public Law 93-275). All firms engaged in domestic uranium raw materials and uranium marketing activities, including purchases, sales, and ownership of ore reserves, natural U308, natural UF6, and enriched uranium are surveyed. These data are collected on Form EIA-858 under a pledge of confidentiality, aggregated, and published in two reports. The Uranium Industry Annual presents a statistical profile of the U.S. uranium industry. The Domestic Uranium Mining and Milling Industry: Viability Assessment provides the Secretary of Energy with basic data and analyses for his annual determination of the viability of the domestic industry. A summary of the 1987 report is attached to my testimony as well as a summary of preliminary data from our 1988 survey.

During the April 19 hearing on S. 83, Senator Domenici expressed concern with the influx of imported Soviet nuclear material and the ability of EIA to require utilities to document the origins of their uranium under the authority granted in 1983. The EIA collects information on Form EIA-858, "Uranium Industry Annual Survey," which was designed to address the information needs of the viability assessment. Information is collected on Schedule B of this form for all domestic purchases, sales, or ownership (including exchanges) of domestic- or foreign-origin uranium. Respondents are asked to report the country of origin of uranium or, for enriched uranium, the country in which the enrichment takes place. This form was designed to focus on the country of origin of natural and enriched uranium imports.

The preliminary EIA data for 1988 show that natural and enriched uranium imports were 14.3 million pounds of U308. However, 17 of the 26 reports submitted on purchases or exchanges of enriched uranium from 1986 through 1988 were unclear as to the country of origin of the enrichment service. Based on subsequent telephone calls to the reporting utilities, additional information about the country of origin of the enrichment service has been offered for all but one transaction which should be available within a few weeks. Including the 16 follow-up inquiries resolved to date, fewer than four involved purchases of USSR-enriched material. That is too few to release in the aggregate without compromising the confidentiality of the source data.

It should be noted that the data on Form EIA-858 represent the information as reported by the respondents. With regard to natural uranium materials this may not account for some of the nationality swaps of material or multiple transactions that lead to the sales transaction finally consummated between the seller and the utility. Therefore, the data regarding country of origin may not be fully representative of the transaction process or the original source of the natural uranium material that made the transaction possible.

Similar claims concerning flag-swaps may be made with regard to enriched materials. However, our investigation so far has not revealed a single instance in which USSR-enriched material has been clandestinely imported to the U.S. As a result we are reasonably confident that all USSR-enriched material entering the U.S. is clearly identified. We are continuing our investigation and should have preliminary results on hand in about a month.

This is not to say that USSR-enriched material does not enter the world markets where it impacts the domestic enrichment and natural uranium markets. In fact, there is reason to believe that considerable inventory swapping is occurring overseas and that these swaps may affect potential enrichment sales by DOE. In a type of inventory swap involving USSR-enriched material, one or more entities, in one or more transactions, might purchase USSR-enriched material and sell other-source enriched material which is imported to the U.S. Such transactions would not be revealed through reporting on Form-858.

Form EIA-858 also collects the amount of natural uranium, which may be of U.S. or foreign origin, that is shipped by a United States utility to a foreign enrichment supplier. However, the foreign enricher is not identified. In the case of U.S.-origin material shipped abroad for enrichment, its return to the U.S. after enrichment would not be counted as an import. If the natural uranium shipped to a foreign enricher was of foreign origin (e.g. China), it would be counted as an import of natural (i.e. Chinese) rather than enriched uranium.

This reporting convention reflects an earlier emphasis on the viability of the uranium mining and milling industry. It would be relatively easy to remove the ambiguity of the natural versus enrichment origin by adding just one question to Form EIA-858, and we are prepared to do that, while proceeding to resolve this issue for the 1986-1988 period by direct inquiry.

In 1987, a total of 3.7 million pounds of U3O8 was shipped to foreign enrichment plants. Of that total, 2.8 million pounds were of foreign origin, and indications are that most of that was enriched in France (Eurodif), according to the DOE/NRC Form-741 data.

Because of the wide range of estimates appearing in the trade press on the amount of uranium being enriched in the USSR and imported into the United States, the EIA is taking several actions to corroborate these reports. In reviewing past transactions, EIA is sending a team of data collection personnel to examine the records of utilities and brokers which have been engaged in the import of enriched uranium. For future collections, EIA will further clarify the reporting instructions on Form EIA-858 concerning the specification of the country of origin for imports of enriched uranium. Currently, that instruction reads: "Provide the country of origin of the uranium (or SWU transfer agreement) for the actual deliveries. Country of origin refers to the country in which the material was produced. For SWU, the country of origin refers to the country in which enrichment takes place." It was surprising to discover that despite these seemingly unambiguous directions, there has been some confusion on the part of respondents. For example, SWU imports might list the country where the uranium was produced instead of the country where it was enriched; the customer-supplier agreement might be based on a confidentiality clause; or reports of countries of origin for natural uranium and enriched uranium might have been switched in cases of exchanges of material. We are working with the survey respondents to clarify any ambiguities in the data they have reported.

EIA is also examining the large data base that was established with data collected on the DOE/NRC Form-741, "Nuclear Material Transaction Report." This form contains information on all transports of nuclear material involving a United States company as a shipper or receiver. EIA is considering the possibility of requiring respondents to Form EIA-858 to submit all filings of DOE/NRC Form-741 associated with the importation of any enriched uranium when they file Form EIA-858.

In summary, the EIA is diligently pursuing an answer to the question of how much uranium enriched in the USSR has entered the United States. As mentioned, we expect to complete our initial review of all available data on this subject in about a month. We would be glad to provide you with the results of the investigation upon its completion.

Mr. Chairman, this concludes my testimony. I would be happy to address any questions the Subcommittee may have.

ATTACHMENT 1

SUMMARY OF DOMESTIC URANIUM MINING AND MILLING INDUSTRY 1987: VIABILITY ASSESSMENT

PUBLISHED SEPTEMBER, 1988

BACKGROUND

Section 170(B) of the Atomic Energy Act of 1954, as amended, requires the Secretary of Energy to report annually to the Congress and the President a determination of the viability of the domestic uranium mining and milling industry. For Calendar Year 1983, the Secretary determined that the domestic mining and milling industry was viable. However, for each subsequent calendar year, 1984, 1985, 1986 and 1987, he determined that the industry was not viable.

To aid in the Secretary's determination, the Energy Information Administration (EIA) has prepared a report entitled, Domestic Uranium Mining and Milling Industry 1987: Viability Assessment. This report is based on data and information provided by the uranium mining and milling industry. The report presents these data and information in the context of the criteria for the viability determination that have been established by rule. The EIA report does not make any judgments or reach any decisions as to industry viability.

SUMMARY OF EIA REPORT

Status of the Industry

Uranium concentrate production in the United States decreased during 1987 to 13.0 million pounds U3O8 from 13.5 million pounds U3O8 in 1986. A trend of decreasing annual production began in 1981. Production in 1986 and 1987 was less than the 1984 production of 14.9 million pounds U3O8 and was about 30 percent of the record annual production of 43.7 million pounds in 1980.

In 1987, ore was processed from 21 underground and open pit mines in the United States compared with 17 in 1986, 19 in 1985, and 27 in 1984. The number of operating uranium mines in the 1985-1987 period has fluctuated between 17 and 21, a significant decrease from 1979 when there were 362 mines operating in the United States.

At the end of 1987, six uranium mills were operating in the United States and 11 were inactive. The number of operating mills has dropped from 20 in 1981 to four in 1985 and six in both 1986 and 1987, and milling rates have fallen from 41,560 tons of ore per day in 1981, to 4,120 tons per day in 1987. Available milling capacity has dropped from 54,050 tons of ore per day in 1981, to 42,650 tons of ore per day in 1986, and 34,650 tons of ore per day in 1987. Milling rates as a percentage of available capacity have dropped from 77 percent in 1981 to 12 percent in 1986.

Expenditures for uranium exploration (in constant 1987 dollars) were $19.6 million in 1987, somewhat lower than the $22.7 million in 1986, and the $21.2 million in 1985. In 1987, 2 million feet were drilled, about the same as was drilled in 1986.

Total capital expenditures (in constant 1987 dollars) in mining and milling facilities were reported to be $29.2 million in 1987, up from $5.4 million in 1986, but less than 10 percent of the expenditures in 1981. Employment in all segments of the uranium industry dropped to approximately 2,000 person-years in 1987, a decrease from the 1986 level of 2,120 and an 85 percent decrease from 1981. Employment in uranium milling decreased slightly from 1986, and the number of person-years reported for uranium mining in 1987 remained constant with 1986.

Net income for the domestic uranium industry was $18 million in 1982 and $43.1 million in 1983. During 1984 and 1985, the industry suffered losses in net income totaling $731.4 million. Losses declined in 1986 to $41.2 million but increased in 1987 to $99.7 million. The losses during the 6-year period of 1982 through 1987 totaled $811.2 million, an amount that exceeds the value of combined assets. The net book value of assets in property, plant, and equipment declined from $2.1 billion in 1982, to $395 million in 1987, a decline of 81 percent.

This condition will not change unless there is an increase in the market price for uranium. There are also large inventories of natural and enriched uranium in the hands of utilities which resulted from take-or-pay contracts when their nuclear plants were delayed, deferred, or cancelled. Other causes of the deterioration of the domestic uranium industry are the downturn in nuclear power development and the availability of high grade, low production cost deposits in foreign countries.

Projected Conditions

The spot market price for uranium (in constant 1987 dollars) is projected to rise to about $26.30 per pound U3O8 by 2000. The long-term contract price is expected to behave similarly, but about $1 per pound higher than the spot price.

Annual domestic production is projected to drop to 7.6 million pounds in 1992, and remain below 10 million pounds until 1996. It will reach 16.1 million pounds in 2000.

Net imports are projected to grow to a peak of 21.6 million pounds in 1992 and decrease to about 17.7 million pounds in 2000. From 1988 to 2000, net imports are projected to comprise between 48 percent and 66 percent of the domestic market requirements and domestic production is projected to represent 22 percent to 46 percent of these requirements. Inventory drawdowns will supply the remaining requirements.

Capital expenditures are projected to remain between $18 million and $23 million until 1996, when they are projected to increase steadily to a level of about $45 million in 2000. Total industry employment by the end of the century is projected to be about 2,500 person-years, compared to 2,000 person-years in 1987.

The Energy Information Administration evaluated the capability of the industry with respect to the four primary criteria established by the regulation. Those criteria are: resource capability, supply response capability, financial capability, and import commitment dependency.

Resource capability is defined as the extent to which domestic economic uranium reserves can supply domestic nuclear power needs for a future 10-year period. The EIA analysis, based on estimates supplied by U.S. producers of the amounts of uranium available for sale over the next 10 years, indicates that the reserves are sufficient to supply domestic nuclear power under plausible assumptions of a wide range of potential future conditions.

Supply response capability involves a measure of the level of domestic uranium production capability sufficient to meet projected nuclear power needs for a future 10-period. The EIA analysis shows that, if a supply disruption were to occur in early 1989, the industry has the technical capability to fulfill cumulative uranium security requirements over the next 10 years. If a disruption were to occur in 1996, the projected capability would nearly satisfy requirements in the year following the disruption; and, the projected shortfalls might be met by increased inventory drawdowns. In subsequent years, the production capacity is projected to increase to the levels needed to meet the requirements. The technical capability of the industry is dependent on the ability of the industry to generate funds. Thus, the supply response capability must be reviewed in conjunction with the financial capability of the industry.

Financial capability is the ability of the domestic uranium mining and milling industry to obtain sufficient funds to finance an adequate supply response capability. To maintain an adequate supply response capability in the future, capital expenditures higher than those projected without an import disruption would be necessary. The potential to raise the required investment funds would be dependent on higher revenues and expectations of profitability. Neither higher revenues nor improved profitability are expected for the uranium industry in the next several years.

Import commitment dependency measures whether executed contracts or options for imported source material or special nuclear material will result in more than 37.5 percent of actual or projected domestic uranium requirements for any two consecutive calendar years. In 1986, U.S. utilities imported 43.8 percent of their uranium requirements; and in 1987, U.S. utilities imported

51.1 percent of their uranium requirements. Thus, utilities imported more than 37.5 percent of their uranium requirements for the two consecutive year period 1986 through 1987.

Since imports of uranium have exceeded the 37.5 percent criterion, the Secretary of Energy has requested, as required by Section 170(B) of the Atomic Energy Act of 1954, as amended, the Secretary of Commerce to initiate an investigation under Section 232 of the Trade Expansion Act of 1962 to determine the effects on national security of these imports.

Released April 4, 1989

ATTACHMENT 2

Summary of Preliminary 1988 and Final 1987 Data on the U.S. Uranium Industry

Uranium Raw Materials Activities

- **Total Surface Drilling:** In 1988, a total of 3.0 million feet of surface drilling was completed, compared to 1.96 million feet of drilling in 1987.
- **Exploration Expenditures:** Total exploration expenditures in 1988 were $19.1 million dollars, a decline of 3 percent from 1987. Expenditures for drilling and land acquisition rose in 1988 compared to 1987, but total expenditures for other exploration work declined sharply in 1988.
- **Economic Reserves:** The industry reported economic uranium reserves of 308 million pounds of U_3O_8 as of the end of 1988, a decrease of 16 percent from the 368.5 million pounds reported as of the end of 1987.
- **Uranium Concentrate Production:** Production of uranium concentrate in 1988 was 13.0 million pounds of U_3O_8.
- **Employment:** Employment in the uranium industry increased from 2,002 person years in 1987 to 2,100 person years in 1988.

Uranium Marketing Activities

- **Domestic:** U.S. suppliers delivered a total of 17.7 million pounds of U_3O_8 to domestic utilities in 1988, compared to 20.8 million pounds in 1987. The reported price was $26.10 in 1988, down from $27.37 in 1987.
- **Foreign:** Imports of U_3O_8 in 1988 totaled 14.3 million pounds, down about 3 percent from the 14.8 million pounds in 1987. The average price was $19.31 per pound, up by about 1 percent from the 1987 price of $19.14.

These data were computed from information reported to the Energy Information Administration (EIA) by uranium producers, users, and marketers on Form EIA-858, "Uranium Industry Annual Survey." Comprehensive and detailed data will be presented and analyzed in EIA's "Uranium Industry Annual 1988," scheduled for publication in August 1989.

U.S. Uranium Industry Summary Data, 1987 and Preliminary 1988

Item	Summary 1987	Preliminary 1988
Uranium Raw Materials Activity		
Total Surface Drilling (million feet)	1.96	3.0
Exploration Expenditures (million dollars)	19.64	19.1
Uranium Economic Reserves as of December 31 (million pounds)	368.5	308
Total U_3O_8 Concentrate Production (million pounds)	12.99	13.0
Employment (person-years expended)	2,002	2,100
Uranium Marketing Activity		
Delivered to Domestic Utilities (million pounds U_3O_8)	20.8	17.7
Average Price of Delivered Uranium (dollars per pound U_3O_8)[a]	27.37	26.10
Quantity of Uranium Imported (million pounds U_3O_8)	14.8	14.3
Average Price of Uranium Imported (dollars per pound U_3O_8)[b]	19.14	19.31

[a] The 1987 price is based on 14.0 million pounds of uranium delivered under contracts having a contract-specified or market-price pricing mechanism, the 1988 price is based on 10.9 million pounds of uranium delivered under such contracts.

[b] The 1987 price is based on the 12.8 million pounds of uranium for which prices were reported. The 1988 price is based on 13.7 million pounds.

Note: Dollar amounts shown are in nominal dollars.

Source: Energy Information Administration, 1987 data *Uranium Industry Annual*, DOE/EIA-0478(87) (Washington, DC, September 1988); 1988 preliminary data: Form EIA-858, "Uranium Industry Annual Survey" (1988).

Senator **Ford** [presiding]. Thank you, Mr. Merklein.

Mr. Sewell, why don't you give your statement, and then we'll ask questions of both of you.

STATEMENT OF PHILIP G. SEWELL, DEPUTY ASSISTANT SECRETARY FOR URANIUM ENRICHMENT, DEPARTMENT OF ENERGY

Mr. **Sewell**. Thank you, Mr. Chairman. It is a pleasure to be here today to discuss the United States uranium industry.

Nuclear power plays a vital role in the national and energy security of the United States, and the domestic mining industry is an important element of this role. Today nuclear power provides about 20 percent of the Nation's electricity supply, electricity which is free of harmful emissions and, therefore, which contributes to clean air. About 40 percent of the U.S. Navy's active combat fleet is propelled by nuclear fuel. As a result, a healthy, secure indigenous nuclear industry is in our country's best interest.

The domestic supply of uranium has contributed to the increasing importance of nuclear energy in the United States. In making this contribution, concerns have periodically been expressed about the adequacy of this supply source in the United States. Initially national security was the prime motivation for creating government incentives to establish a viable American uranium mining industry. Then with the anticipated success of the U.S. civilian nuclear power program, prospects for growth were so bright that in 1964 Congress concluded that "the domestic mining and milling industry could develop normally without future reliance on the U.S. Government for its market."

From the beginning, the Atomic Energy Commission, the Energy Research and Development Administration, and the Department of Energy have taken actions concerning the domestic mining and milling industry that were consistent with and supportive of congressional intent as part of overall national energy policies.

Initially, the AEC was directed not to offer enrichment services for uranium of foreign origin for domestic use. The language of the Atomic Energy Act, however, provided for the AEC to periodically survey the condition of the domestic and world uranium markets and to revise its enrichment criteria, from time to time, should conditions warrant. In 1974, the criteria were revised by the AEC to gradually phase out restrictions on the enrichment of foreign-origin uranium so that after 1983 no restrictions would be in place.

In 1982, in anticipation of the elimination of these restrictions scheduled for 1983, Congress considered and specifically rejected legislation to require mandatory restrictions on the import of foreign-origin uranium. A proposed amendment to the Nuclear Regulatory Commission Authorization Act would have required the Nuclear Regulatory Commission to issue criteria restricting the importation of source material and special nuclear material.

The conference committee rejected this amendment and reported a bill which contained a provision to require the Secretary, when foreign uranium imports reached a level of 37.5 percent, to revise DOE's enrichment criteria "so as to encourage the use of domestic-origin uranium in domestic nuclear power plants." This provision, however, was rejected by the House of Representatives, and a substitute provision was agreed to by both Houses.

In the substitute measure, section 170(B) of the Atomic Energy Act, Congress deleted all references to mandatory import restrictions and instead provided for: (1) an annual viability determination by the Secretary; (2) the possibility of an investigation under section 201 of the Trade Act; and (3) the requirement that the Secretary of Energy request that the Secretary of Commerce initiate an investigation, pursuant to 19 U.S.C. 1862, if uranium imports from executed contracts or options are projected at a level of 37.5 percent for a consecutive two year period.

As part of the 1987 viability determination by DOE, it was determined that executed contracts or options from foreign sources were greater than 37.5 percent of actual or projected domestic uranium requirements for the consecutive two year period, 1986 and 1987. Therefore, the Secretary of Energy requested the Secretary of Commerce to initiate an investigation to determine the effects of uranium imports on national security. We understand that this investigation is expected to be completed by September of this year.

The increased level of imports is just one circumstance, among a number of events affecting the domestic mining and milling industry, that have recently occurred. In June of 1988, the Supreme Court ruled that DOE was not required to impose import restrictions where such restrictions would not achieve the statutory goal of restoring the domestic mining industry's viability, as specified in section 161(v) of the Atomic Energy Act.

This lawsuit, originally brought against DOE by domestic miners in 1984, was remanded to the U.S. District Court for the District of Colorado to give domestic miners the opportunity to challenge DOE's conclusion that restrictions on the enrichment of foreign uranium for domestic use would not assure the viability of the domestic mining industry. This case was effectively concluded when the miners filed a motion, in January 1989, to dismiss the case without prejudice.

The Supreme Court's ruling and the miners' subsequent dismissal of their lawsuit avoided what potentially could have been a disastrous situation for both the U.S. uranium and U.S. enrichment businesses because enrichment restrictions could have resulted in a significant number of domestic utilities purchasing both their uranium and enrichment services from foreign sources.

Another important event in 1988 involved the congressional ratification of the U.S.-Canada Free Trade Agreement. This agreement provides that, for the purpose of section 161(v) of the Atomic Energy Act, Canadian-origin uranium shall be treated identically to domestic-origin uranium. In calendar year 1988, about 40 percent of the uranium delivered by domestic customers for enrichment was of foreign-origin. Nearly 80 percent of this foreign-origin uranium came from Canada. As a result of the Free Trade Agreement, DOE's ability to control the quantities of foreign-origin uranium to be enriched by domestic customers in favor of U.S.-origin uranium, under section 161(v) of the Atomic Energy Act, is extremely limited.

A positive result of actions taken within the U.S. uranium industry, and encouraged by DOE, involved a major sales effort to

Japan. In 1988, the domestic uranium industry was successful in its foreign sales efforts as evidenced by obtaining more than $320 million in future contract commitments from Japan. In fact, this success highlights the fact that despite the nonviability determination in 1987 for the industry as a whole, there are a number of producers who are capable of reliably producing competitively priced uranium over the long term.

A more disturbing recent market trend has been the increase in availability in the world markets of enriched uranium from the Soviet Union, at apparently heavily discounted prices. Some of this enriched uranium has been offered through direct sale to the United States from the Soviet Union or, more often, indirectly through brokered or traded deals, where Soviet Union material is first exchanged for non-Soviet material held in world inventories.

Both the domestic uranium industry and the U.S. enrichment program are affected by the availability of such discounted enriched uranium. Uncommitted domestic demand has been and continues to be the subject of penetration from these types of indirect transactions. It has been estimated that as much as $140 million in uranium sales losses and $170 million in enrichment sales losses may have occurred over the last three years as a result of these types of transactions.

In any event, there appears to be an increasing potential for more sales of this nature in the future, and their effect on the domestic uranium and U.S. enrichment program will probably increase. The United States, by virtue of having the world's largest uncommitted requirements, automatically becomes an attractive market.

Finally, Mr. Chairman, as you are aware, last month the administration submitted legislation to Congress which would restructure the uranium enrichment enterprise by creating a government corporation. Both this proposal and your amendment to S. 83 would repeal section 161(v) of the Atomic Energy Act. The main reason for this change is that the principal purpose of section 161(v), to authorize DOE to provide enrichment services, would be replaced by the assignment of this function to the new corporation.

Equally appropriate, I believe, is the elimination of the language regarding import restrictions because, as a commercial entity, an enrichment corporation would not be an appropriate vehicle through which to attempt to impose trade restrictions.

The changes and events that have occurred have reduced the domestic uranium industry to a smaller size. However, it is an industry that is still competitive and capable of providing a reliable source of supply. The combination of domestically supplied and Canadian-origin uranium provide an abundant, assured and economical energy supply source that supports our energy security.

Certain market forces could threaten the domestic uranium industry, such as the potential increase of material available at discounted prices, from market sectors like the Soviet Union.

In addition, a large worldwide inventory surplus of uranium exists today that is equivalent to five years of demand.

Finally, the domestic uranium industry, like many other industries, faces the economic burden of increasingly stringent and costly environmental compliance requirements.

In light of the many pressures facing the domestic uranium industry, a very careful and deliberate review of the most appropriate means for assuring a healthy, reliable supply source is necessary. Proposals made in the past may be obsolete and require reexamination. And, of course, we are facing a number of difficult choices in establishing energy policies and priorities for the Nation, especially in light of the economic realities of the Federal budget limitations. The completion of this study on the effect of uranium imports by the Commerce Department in September should provide some additional insight into what, if anything, needs to be done regarding the domestic uranium industry.

The bottom line, Mr. Chairman, is that an approach to assure the viability of the uranium industry has not yet been identified which is acceptable to all parties. The Department is prepared to work closely with Congress and the industry toward ensuring the viability of the uranium industry. However, the administration has serious reservations about Amendment 10 to S. 83.

In the meantime, we encourage Congress to move forward with the administration's legislation to restructure the enrichment business as a government corporation. This legislative initiative offers a constructive solution for the problems of this important nuclear business, and, as such, we believe that action to pass this legislation should proceed promptly. With the establishment of a competitive, finanically healthy enrichment corporation, made possible through the cooperative efforts of Congress and the Administration, a vital element in assuring a healthy, secure, indigenous nuclear industry will be in place.

Thank you, Mr. Chairman. That concludes my statement.

[The prepared statement of Mr. Sewell follows:]

Statement of
Philip G. Sewell
Deputy Assistant Secretary for Uranium Enrichment
U.S. Department of Energy
Before the
Subcommittee on Energy Research
and Development
Committee on Energy and Natural Resources
May 11, 1989

Mr. Chairman, it is a pleasure to be here today to discuss the United States uranium mining industry.

Nuclear power plays a vital role in the national and energy security of the United States and the domestic uranium mining industry is an important element of this role. Today, nuclear energy provides about 20 percent of the Nation's electricity supply; electricity which is free of harmful emissions and, therefore, which contributes to a clean air environment. Also, approximately 40 percent of the U.S. Navy's active combat fleet is propelled by nuclear fuel. As a result, a healthy, secure indigenous nuclear industry is in our country's best interests.

The domestic supply of uranium has contributed to the increasing importance of nuclear energy in the United States. In making this contribution, concerns have periodically been expressed about the adequacy of this supply source in the United States. Initially, national security was the prime motivation for creating governmental incentives to establish a viable American uranium mining industry. Then, with the anticipated success of the U.S. civilian nuclear power program, prospects for growth were so bright that in 1964 Congress concluded that "the domestic mining and milling industry could develop normally without future reliance on the

U.S. Government for its market."* Since the beginning, the Atomic Energy Commission (AEC), the Energy Research and Development Administration (ERDA), and the Department of Energy have taken actions concerning the domestic mining and milling industry that were consistent with, and supportive of, Congressional intent as part of overall national energy policies.

Initially, the AEC was directed not to offer enrichment services for uranium of foreign origin for domestic use. The language of the Atomic Energy Act, however, provided for the AEC to periodically survey the condition of the domestic and world uranium markets and to revise its enrichment criteria from time to time, should conditions warrant. In 1974 the criteria were revised by the AEC to gradually phase out restrictions on the enrichment of foreign origin uranium such that, after 1983, no restrictions would be in effect.

In 1982, in anticipation of the elimination of restrictions scheduled for 1983, Congress considered and specifically rejected legislation to require mandatory restrictions on the importation of foreign origin uranium. A proposed amendment to the Nuclear Regulatory Commission Authorization Act would have required the Nuclear Regulatory Commission (NRC) to issue criteria restricting the importation of source material and special nuclear material. The conference committee rejected this amendment and reported a bill which contained a provision to require the Secretary, when foreign uranium imports reached a level of 37.5 percent, to revise DOE's enrichment criteria "so as to encourage the use of domestic origin uranium in domestic nuclear powerplants." * This provision, however, was rejected by the House of Representatives,** and a substitute provision was agreed to by both Houses. In the substitute measure, Section 170(B) of the Atomic Energy Act (codified at 42 U.S.C. 2210(b)), Congress deleted all references to mandatory import restrictions and, instead, provided for, inter alia, (1) an annual viability determination by the Secretary, (2) the possibility of an investigation under Section 201 of the Trade Act, and (3) the requirement that the Secretary request that the Secretary of Commerce initiate an investigation pursuant to 19 U.S.C. 1862 if uranium imports from executed contracts or options are projected at a level of 37.5 percent for a consecutive two-year period.

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*Senate Report No. 1325, amending the Atomic Energy Act of 1954, for private ownership of special nuclear materials, August 5, 1964, p. 10.

As part of the 1987 viability determination by DOE, it was determined that executed contracts or options from foreign sources were greater than 37.5 percent of actual or projected domestic uranium requirements for the consecutive 2 year period 1986 and 1987. Therefore, the Secretary requested the Secretary of Commerce to initiate an investigation to determine the effects of imports on national security. We understand that this investigation is expected to be completed by September of this year.

The increased level of imports is just one circumstance among a number of events affecting the domestic mining and milling industry that have recently occurred. In June of 1988, the Supreme Court ruled that DOE was not required to impose enrichment restrictions where such restrictions would not achieve the statutory goal of restoring the domestic mining industry's viability as specified in 161(v) of the Atomic Energy Act. This lawsuit, originally brought against DOE by domestic miners in 1984, was remanded to the U.S. District Court for the District of Colorado, to give domestic miners the opportunity to challenge DOE's conclusion that restrictions on the enrichment of foreign uranium for domestic use would not assure the viability of the domestic mining industry. This case was effectively concluded when the miners filed a motion in January 1989, to dismiss the case, without prejudice. The Supreme Court's ruling and the miner's subsequent dismissal of their lawsuit avoided what potentially could have been a disastrous situation for both the U.S. uranium and U.S. enrichment businesses, because enrichment restrictions could have resulted in a significant number of domestic utilities purchasing both their uranium and enrichment services from foreign sources.

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* 128 Cong. Rec., S. 13054 (daily ed., Oct. 1, 1982) (Remarks of Senator Domenici)

** Id. at H. 8809

Another important event in 1988 involved the congressional ratification of the U.S.-Canada Free Trade Agreement. This agreement provides that, for purposes of Section 161(v) of the Atomic Energy Act, Canadian origin uranium shall be treated identically to domestic origin uranium. In calendar year 1988, about 40 percent of the uranium delivered by domestic customers for enrichment was of foreign origin. Nearly 80 percent of this foreign origin uranium came from Canada. As a result of the Free Trade Agreement, DOE's ability to control the quantities of foreign origin uranium to be enriched by domestic customers in favor of U.S. origin uranium under Section 161(v) of the Atomic Energy Act is extremely limited.

A positive result of actions taken within the U.S. uranium industry involved a major sales effort in Japan. In 1988, DOE encouraged the domestic uranium industry in its foreign sales efforts and the success in obtaining more than $320 million in future contract commitments from Japan was a positive indication of a stronger future. In fact, this success highlights the fact that despite the nonviability determination in 1987 for the industry as a whole, there are a number of producers who are capable of reliably producing competitively priced uranium over the long term.

A more disturbing recent market trend has been the increased availability of enriched uranium from the Soviet Union in world markets at apparently heavily discounted prices. Some of this enriched uranium has been offered through direct sale to the United States from the Soviet Union or, more often, indirectly through brokered or traded deals where Soviet Union material is first exchanged for non-Soviet origin material held in world inventories. Both the domestic uranium industry and the U.S. enrichment program are affected by the availability of such discounted enriched uranium. Uncommitted domestic demand has been and continues to be subject to penetration from these types of indirect transactions. It has been estimated that as much as $140 million in uranium sales losses and $170 million in enrichment sales losses may have occurred over the last 3 years as a result of these types of transactions. In any event, there appears to be an increasing potential for more sales of this nature in the future and their effect on the domestic uranium and U.S. enrichment program will probably increase. The United States, by virtue of having the world's largest uncommitted requirements, automatically becomes an attractive market.

Finally, Mr. Chairman, as you are aware, last month the Administration submitted legislation to Congress which would restructure the uranium enrichment enterprise by creating a Government corporation. Both this proposal and Senator Ford's amendment to S.83 would repeal section 161(v). The main reason for this change to the Atomic Energy Act is that the principal purpose of section 161(v), to authorize DOE to provide enrichment services, would be replaced by the assignment of this function to the new corporation. Equally appropriate, I believe, is the elimination of the language regarding import restrictions because, as a commercial entity, an enrichment corporation would not be an appropriate vehicle through which to attempt to impose trade restrictions.

The changes and events that have occurred have reduced the domestic uranium industry to a smaller size. However, it is an industry that is still competitive and capable of providing a reliable source of supply. The combination of domestically supplied and Canadian origin uranium provide an abundant, assured and economical energy supply source that supports our energy security. Certain market forces could threaten the domestic uranium industry, such as the potential increase of material available at discounted prices from market sectors like the Soviet Union. In addition, a large worldwide inventory surplus of uranium exists today that is equivalent to 5 years of demand. Finally, the domestic uranium industry, like many other industries, faces the economic burden of increasingly stringent and costly environmental compliance requirements.

In light of the many pressures facing the domestic uranium industry, a very careful and deliberate review of the most appropriate means for assuring a healthy, reliable supply source is necessary. Proposals made in the past may be obsolete and require reexamination. And, of course, we are facing a number of difficult choices in establishing energy policies and priorities for the Nation, especially in light of the economic realities of Federal budget limitations. The completion of this study on the effect of uranium imports by the Commerce Department in September of this year should provide some additional insight into what, if anything, needs to be done regarding the domestic uranium industry.

The bottom line, Mr. Chairman, is that an approach to ensure the viability of the uranium industry has not yet been identified which is acceptable to all parties. We are prepared to work closely with Congress and the industry toward ensuring the viability of the uranium industry. However, the Administration has serious reservations about Amendment 10 to S.83.

In the meantime, we encourage Congress to move forward with the Administration's legislation to restructure the U.S. enrichment business as a Government corporation. This legislative initiative offers a constructive solution for the problems of this important nuclear business and, as such, we believe that action to pass this legislation should proceed promptly. With the establishment of a competitive, financially healthy enrichment corporation through the cooperative efforts of Congress and the Administration, a vital element in assuring a healthy, secure indigenous nuclear industry will be in place.

Senator **Ford**. Thank you very much, Mr. Sewell.

Senator Domenici.

Senator **Domenici**. Mr. Chairman, I am in the very awkward position having encouraged you to have the hearings today. I'm in the final moments of finishing the budget conference, and I have excused myself to come up here and to make a brief statement because I'm concerned about your knowing where I am.

Senator **Ford**. As Chairman, may I set the agenda, Senator? We will ask the witnesses to relax and you may make your statement. I may even make mine before we get back to questions. So, you may proceed.

STATEMENT OF HON. PETE V. DOMENICI, U.S. SENATOR FROM NEW MEXICO

Senator **Domenici**. Thank you very much.

Let me just say first to you, Mr. Chairman, I am very pleased that you are moving ahead with serious legislation in the enrichment area. I harken back to how all this started. And frankly, I was very delighted when we were in the majority to have started a bill that included modernizing the enrichment process and that included some alleviation for some assistance to the mining industry, the uranium industry, that I think is tied inextricably to the enrichment business.

I remember vividly that it was that legislation that got all this started. We had three parts to it. Enrichment was one part, cleanup was another part, and doing something for the uranium industry was another part.

I understand there are some who now say let's proceed with the enrichment and let's forget about the miners and the mining industry and let's forget about the cleanup. Well, I am here to tell you that I was part of starting this, and I intend to see that it sticks together. For those who are in a hurry on enrichment, let me suggest we have been in a hurry to try to salvage a dying industry.

It has a chance. It is tough, but it needs a little help. It is tough enough to win some Japanese bids recently, but it's not tough enough to go through this transition without some transition help. The Canadians do this for theirs, and we have just given up the ship to them hoping that they will be our supplier along with Australia forever and abandoning huge reserves in this country, including huge investments.

I would just like everyone here to know that that is not going to be easy, to fix the enrichment side without doing some of the other things. I hope some of my friends will support me on that. I don't think we need a lot.

If I would have had time today, I would have spent some talking about flag swapping. I don't quite understand why we aren't doing that right. I thank the Department for finally saying they're going to get the information to find out the point of origin of the uranium coming into the United States.

If I had time, we would talk about the unique evolution of spot market making in the United States. In fact, if I had time, I would go into it in detail and ask the distinguished Chairman if he would join me in urging the three companies that are involved in trading and making the spot market to let somebody look at their books. I have a strong suspicion that they are rigging the price.

And I have some hypothetical questions for any of you who are experts. And you could not help but answer that it is entirely possible that the way it is being done, that the price is being rigged. I'm not saying they are, but it is indeed possible. It is an unregulated three or foursome out there, and you don't have to be a genius when they are both setting the spot market and doing the trading and buying short and buying long—I can develop a scenario where they can make money when it goes up, make money when it goes down, and they set the price. I don't think that is very good. We have uranium at $10 now for my friends, the lowest it has ever been. I think something is fishy.

I am hopeful that the utility industry, which was so helpful before and then scurried out the door because somebody has said we're not going to worry about the uranium industry, so they believe that is gospel. One of my good friends on this committee apparently has encouraged that, that you don't have to talk about this uranium industry or the cleanup because we're just going to get an enrichment bill this year. And so, they were getting very close to talking sense, and all sense has disappeared in the rush and hurry to get an enrichment bill freestanding.

I think before we are finished, maybe you all can get back to the table with us and talk or maybe it will be a little while before we get anything done. I don't want this to happen, and I say that to my good friend. I would like to get an enrichment bill done. I think we need it. I think he knows that I think we need it. I didn't have the same kind of interest he had, and yet I was very interested in trying to straighten out an enrichment industry which we had let go to pot. So, I was on that wagon helping him long before today, and I want to be there. And I want to say that to him. I want to be helpful, but I just believe we can be helpful in some other areas at the same time in a reasonable way.

And I thank you for yielding to me. If I'm lucky we will get you that fraudulent budget within the next 30 or 40 minutes, and we can all get on with our work around here. [Laughter.]

Thank you, Mr. Chairman.

Senator FORD. Let me say to my good friend since you will not be here, I will increase my questions as it relates to flag swapping and the spot market.

I have not had an opportunity to read my statement, so I'm going to read you three paragraphs.

Senator DOMENICI. Thank you.

Senator FORD. Don't couple me with anybody till I couple myself.

Senator DOMENICI. I didn't.

STATEMENT OF HON. WENDELL H. FORD, U.S. SENATOR FROM KENTUCKY

Senator FORD. These are the paragraphs.

Congress must enact policies that aid the U.S. in using domestic sources of energy. This includes improving the competitiveness of the uranium mining industry.

In the West there are piles of radioactive uranium mill tailings that must be cleaned up. Some of the uranium produced at these mill sites was sold directly to the government. An equitable cost-sharing proposal must be put in place so that these locations are stabilized.

I share the concern of the western Senators led by Senator Domenici regarding the status of this industry, and I look forward to working with him to improve it.

And I ask unanimous consent that the balance of my statement might be included in the record.

[The prepared statement of Senator Ford follows:]

STATEMENT OF SENATOR WENDELL H. FORD
HEARING ON URANIUM REVITALIZATION PROPOSAL
AMENDMENT 10 TO S. 83
May 11, 1989

I am very pleased to Chair today's hearing on a proposal to aid the ailing domestic uranium mining and milling industry. Amendment 10 to S. 83, introduced by Senators Domenici, Bingaman, Simpson, Wallop, Garn and Hatch, is almost identical to elements of the uranium package approved by the Senate in the last Congress. The Administration and the utilities supported that package.

The uranium industry in the United States is experiencing severe hardship. Employment and production are dramatically lower than at the beginning of this decade. The number of jobs in the uranium mining and milling industry has fallen by 89% since 1980 and EIA projects employment will be cut in half again before rising modestly. It is not surprising that this has some of our Western Senators concerned. I am concerned too.

No one thinks that the mining industry in this country will return to the production and employment levels of the late 1970's. In the 1970's, the uranium industry grew far more rapidly than the market dictated. That "boom" was followed by this decade's "bust."

The closing of mines has increased our dependence on foreign sources of natural uranium. Our imports will remain above 50% through the end of this century and may even rise to as high as 70% in the next five years. In addition, the Soviets and the Chinese are marketing uranium products aggressively in this country and our producers are not in the position to compete with them. Again, this concerns me.

The Secretary of Energy has found the domestic mining and milling industry non-viable for the last four years. This year, the Secretary of Commerce is examining the national security implications of this situation. I am looking forward to his report.

Congress must enact policies that aid the U.S. in using domestic sources of energy. This includes improving the competitiveness of the uranium mining industry.

In the West, there are piles of radioactive uranium mill tailings that must be cleaned up. Some of the uranium produced at these mill sites was sold directly to the government. An equitable cost-sharing proposal must be put in place so that these piles are stabilized.

I look forward to hearing the testimony today on proposals to aid this ailing industry and to clean up the mill tailings. The issue is not whether we need to help the miners, but how we can help them.

I share the concern of the Western Senators, led by Senator Domenici, regarding the status of this industry, and I look forward to working with him to improve it.

Senator **Domenici**. And I say thank you very much, Mr. Chairman.

Senator **Ford**. And that's on the record.

Senator Wallop, do you have a statement you would like to make?

Senator **Wallop**. Thank you, Mr. Chairman, and before my colleague from New Mexico leaves, I want him to rest assured that he has allies in his quest.

Senator **Ford**. Well, I can name five right quick. [Laughter.]

STATEMENT OF HON. MALCOLM WALLOP, U.S. SENATOR FROM WYOMING

Senator **Wallop**. I have to begin by stating a certain sense of outrage and cynicism, Mr. Sewell, and it has to do with my opening statement. But those practices that threaten your government business of enrichment, such as Soviet imports, are all considered damnable and indeed threatening, but all of those which threaten the producers are just consequences of market forces and they are therefore acceptable, which is a strange way for an enterprise oriented administration to view the world. Those things which threaten the government enterprise are no less or more threatening than those which threaten the viability and the health of the industry which underlies it.

And I cannot help but observe as well your statement on the Canadian Free Trade Agreement as sort of making Canadian and American supplies interchangeable and reliable and everything else. But let me remind people and the government of the United States if it is necessary—and apparently it is—that we have a treaty with the Canadians that supersedes at least in one dimension the Free Trade Agreement, and that is the one which prohibits us from using Canadian uranium for weapons production. So, they are not interchangeable, and the viable domestic supply is every bit as much of a concern and a consequence to the security of America as are the others.

Now, there are some bills in this committee that seem to have a perpetual sort of presence. They involve important national issues, and they become bogged down in the legislative swamp. The Uranium Revitalization Act is beginning to resemble one of these swamp creatures. Everyone on the committee is familiar with the history of the legislation.

Last year the Energy Committee approved our original proposal and the revised version. The Senate passed it several times. But the Uranium Revitalization Act became embroiled in the debate on the major trade agreement, and the House of Representatives refused to act due to procedural objections, which is a strange way to view a national obligation to look after the country.

This is the seventh year that I and my colleague from Wyoming and Senators from New Mexico have worked to save the domestic uranium mining industry, something of a tribute to the industry that it has been able to survive while this effort has gone on.

But during the decade, the industry has been devastated. In 1980 there were nearly 6,000 Wyoming workers employed in the uranium mining and milling industry. Today they are less than 10 percent of that number. The experience in Wyoming is similar to national trends. Those Wyoming communities adjacent to the mining operations, such as Jeffrey City and Riverton, have been economically crushed by the collapse of uranium mining. Industry has been a victim of both the collapse of the market and subsidized foreign production, but I state again uranium production is vital to our national security and it is vital because of treaty arrangements that we have that make it the sole source of supply of our weapons production.

The fact is that we codified that into law though we seem content to disregard it. The law has been ignored by the Department of Energy, but nonetheless we still need it for both energy and defense requirements.

There are three reasons in my opinion why the Uranium Revitalization Act must be enacted into law.

First, electric generating capacity is falling behind demand. Unless we start planning now, we face power shortages as we enter the 21st century. And I know and the Senator from Kentucky knows that the first thing that the Congress is going to do when brownouts occur is to blame the companies, anybody but ourselves, for failure to act.

Second, the political response to global warming may include restrictions on fossil fuels uses. And we should anticipate the revival of nuclear power and especially as the new generation of nuclear power plants are developed.

Lastly, our ability to deal with power shortages and global warming will be limited if we cannot bring our uranium mines back into production. Already closed mines are gradually flooding. It is no easy task to reopen such a mine. Some may never reopen due to cost, technical problems and environmental problems created by their downtime. For this reason alone, the revitalization bill should become law for it will keep the mines operating.

And one of the consequences that we ought to avoid at all costs as we become dependent for now more than 50 percent on foreign supplies for our domestic petroleum is to become as well dependent for more than 50 or 60 or 70 percent of our needed uranium requirements on foreign production.

The industry still has life in it. A major sale concluded with the Japanese last fall was helpful. Should we enact our amendment, the additional purchases required should give the uranium industry that necessary boost to keep it viable.

To me it is time to insist that the administration and the utilities continue their support, and I urge the House of Representatives to please, for God's sake, let us out of this swamp.

Thank you, Mr. Chairman.

Senator FORD. Thank you, Senator Wallop.

Now that we are treaty-bashing, I want to remind my colleagues that I was one of nine who voted against the Canadian Free Trade Agreement, and I don't know how many you know that voted against it, but it got down to where it got a little lonesome. And one of the main reasons exactly the hearings we are having here today was one of my good reasons for opposing the Canadian Free Trade Agreement. So, I thought I would get that into part of the record this afternoon.

We are honored with the Republican whip's presence here today, the distinguished senior Senator from Wyoming who has a statement. It's the first time I heard a leader say he had plenty of time. Just take your time. They have always been in a hurry, and I am glad that you have things so well organized that you have plenty of time, Senator Simpson. We look forward to your sterling statement.

Senator SIMPSON. These are just public statements you are making now. What you say in private has never been recorded on the record about me, has it? [Laughter.]

Senator FORD. The only thing I've ever said about you publicly I say privately; the only thing I say privately I say publicly.

Senator SIMPSON. Well, I do know what the seniority system is all about still. That's why I was sitting here so patiently.

STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM WYOMING

Senator SIMPSON. I want to thank you, Mr. Chairman, for your really unfailing courtesy to me not just here, but in all my time in the Senate. That has been a very unique thing, and I enjoy you very much.

Senators Domenici and Wallop—how could you have any better spokesman for an industry or a region than these two? Their remarks and the Chairman's remarks have covered my position pretty well. I will put the full statement in the record. It's not long. I ask unanimous consent that it be placed in the record.

Senator FORD. Without objection, it will be included.

Senator SIMPSON. But it has been a long haul, and we put together this legislation. We gave it every serious consideration. It had to have three things to deal with the enrichment facilities and the duties and having a government enrichment corporation. Revitalizing the industry—Pete Domenici spoke of it. My friend Malcolm has spoken of it in providing for the cleanup, and all of it in the face of the most unbelievable situation that ever happened to an industry in the United States, and that is to have its own government declare that it was not viable and then do nothing for it. Absolutely nothing.

Now, that is the absolutely epitome of stupidity. You never should have gone through the process. If any other industry in the United States had been found to be "not viable", really a pretentious word in itself, and then do nothing, absolutely nothing, through various administrations is something that does stir our ire. It sure stirs mine.

And so, I won't talk about national security and balance of trade. Those things are part of it. But I can say that from my experience, I've been working on a piece of legislation that was all going to be one big piece, and these pieces are going to stay in it, as far as I'm concerned. And it was a complete package then.

And finally, we do have the House listening. And I can assure you that will happen. At the end of the last session, there were some commitments made by key House Members to process this and consider this legislation, and those promises will be kept if we get it out of here.

But I think all three parts are quite necessary in order to renew the strength of the domestic uranium industry.

And I hope too, Mr. Chairman, that you can retain in your activities the $80 million of the $750 million procurement program going to small producers. I have head that is tough to define. It's really not hard to define. There are some small producers out there in the real world of New Mexico and Wyoming and the uranium producing states, and ensuring that they get their share is only fair.

So, I urge this consideration of the package and hope you can move forward to save this critical industry. And when we do have the debate on the greenhouse effect, and when we do have the debate on acid rain, what does anybody think is going to happen? We'll come right back to the uranium industry. And they're going to look at Congress and say what did you do. They are going to look at the government and say what did you do. And that will be even more of a search light.

So, I just think that it is unfortunate we have not been able to pass that legislation despite the undeniable problems facing the industry, and I hope that this bill will receive favorable consideration as we process it and watch our industries buying the uranium from all over the world except here and then giving us cheery little lectures on the deficit and the trade balance. That is tedious too.

Thank you, Mr. Chairman.

[The prepared statement of Senator Simpson follows:]

STATEMENT OF
ALAN K. SIMPSON
UNITED STATES SENATOR, WYOMING
May 11, 1989

Thank you very much for the opportunity to present a statement this afternoon on the "Uranium Revitalization, Tailings Reclamation, and Enrichment Act of 1989." This legislation is of vital importance to Wyoming and to the Nation, and I support it wholeheartedly.

Primarily because of low-priced, subsidized imports, some of which comes from the Soviet Union, the domestic uranium industry is in dire straights. Indeed, the Department of Energy has declared the industry "non-viable" for the last several years, and yet has done nothing to help that critical industry.

The bill being considered by this Subcommittee will help the industry. This legislation will (1) revitalize the uranium industry by providing for a $750 million domestic uranium procurement program, $80 million of which is earmarked for small producers, (2) provide for a $1 billion uranium mill tailings cleanup program, and (3) restructure DOE's uranium enrichment program.

All three parts of the bill are necessary in order to renew the strength of the domestic uranium industry, and I urge this Subcommittee and the full Committee to keep it intact. This legislation passed the Senate as a complete package in the last session, and, if kept together, should do so again.

Failure to act soon on this legislation, however, will mean further reliance on foreign sources for uranium. This will only add to our balance-of-trade problem, and could cause serious supply problems in meeting our domestic energy and our military needs. We all know from experience that dependence on foreign sources for our energy supply is just not an acceptable position.

Let me also state that I strongly support the provision whereby $80 million of the $750 million procurement program goes to "small producers". Out in the real world of Wyoming, and New Mexico, small producers are such an important part of the industry and insuring that they get their share is only fair.

In short, I urge you to favorably consider the uranium revitalization package and to move swiftly to save this crucial industry. It is unfortunate that we have not been able to pass this legislation despite the undeniable problems facing the industry, and I hope that this bill will receive favorable attention by both the Senate and the House this time.

Senator **Ford**. Thank you, Senator. It is always good to have you with us and good to hear from you. If you wish to stay and join us in questioning of the witnesses, we would be delighted to have you stay.

I am going to ask a few more questions than I would have normally. It may take a little more time because Senator Domenici is not here, and I do want to get his questions on the record as it relates particularly to flag swapping and the spot market.

So, what I will do then, Mr. Merklein, I will start with you and we'll go from there to Mr. Sewell.

Mr. Merklein, what percentage of the uranium sales take place in the spot market?

Mr. **Walton**. We have some information on that, if I may provide it.

Senator **Ford**. That would be fine.

Mr. **Walton**. In 1988 of the 17.7 million pounds of uranium delivered from our domestic suppliers to the utilities, we are showing 27 percent being delivered in the spot market and 73 percent being under long-term contracts.

Twenty percent of the deliveries during 1988 from foreign suppliers to U.S. companies, including utilities, brokers, and producers, were in the spot market. These are all preliminary numbers for 1988.

Senator **Ford**. These are international sales of 20 percent on the spot market.

Mr. **Walton**. Twenty percent of 1988 deliveries to the United States were on the spot market, and 80 percent were under long-term contracts.

Senator **Ford**. Let me ask you this then. Does the information that you collect show that deliveries under long-term contracts are being made at current spot market prices?

Mr. **Walton**. Are the deliveries under the spot purchases——

Senator **Ford**. Deliveries under long-term contracts are being made at current spot market prices.

Mr. **Walton**. I would say no.

Senator **Ford**. No.

Mr. **Walton**. Right. They're a mix of prices that generally are higher.

Senator **Ford**. But there are some long-term deliveries that are being made then at spot market prices.

Mr. **Walton**. I couldn't tell you exactly, at the $10 a pound that we are seeing today, the contract activity. I would have to look back at the——

Senator **Ford**. Well, but you can answer with some certainty, can't you, that some long-term contracts are being delivered at spot prices?

Mr. **Walton**. Yes.

Senator **Ford**. Do many countries have export policies for uranium that require floor prices?

Mr. **Walton**. Excuse me. Is your question whether some foreign countries have price-setting mechanisms for their exports?

Senator **Ford**. Well, that could be it or a floor that they would set.

Mr. **Walton**. Well, Australia has floor prices for exports of $28 per pound for short-duration contracts and $31 per pound for long-term contracts.

Senator **Ford**. What about Canada?

Mr. **Walton**. I'm not aware of one, but maybe—John, are you aware?

Mr. **Geidl**. I'm not aware.

Senator **Ford**. I'll get to that a little later today then. We have some interesting questions and I think some interesting answers.

Are spot market prices now below these so-called floor prices?

Mr. **Walton**. The trading companies are publishing numbers at $10 a pound which would be well below what Australia's floor price.

Senator **Ford**. So, the Canadian spot market price is well below the Australian price.

Mr. **Walton**. I can't answer that question. We don't have that information.

Senator **Ford**. If this is the Energy Information Agency, I think you should try to provide us with the information.

Dr. **Merklein**. We will see what we can do.

[The information follows:]

The spot market price is the same world-wide. It is published by the uranium trading companies as their judgment of the current price at which transactions for natural uranium concentrates could be concluded. Canadian uranium traded at the April 30, 1989, spot price of $10.10 would be well below the Australian floor price.

Senator **Ford**. Well, aren't spot market prices approaching an all-time low of $10 a pound?

Mr. **Geidl**. They are pretty close to the bottom if not at the bottom.

Senator **Ford**. Do you see any U.S. production coming on line at that price?

Mr. **Geidl**. Coming on to meet that price?

Senator **Ford**. Yes.

Mr. **Geidl**. I don't see that encouraging new U.S. production, no, Senator.

Senator **Ford**. If not, what price must be sustained to increase the production in the United States?

Mr. **Walton**. I would say we would have to get back into the $20 range.

Senator **Ford**. Back in the $20 range.

Can the Canadian mines bring production on at this $10 a pound level?

Mr. **Walton**. If they can figure out how to mine Cigar Lake maybe, which is a very rich deposit in Canada.

Senator **Ford**. Isn't that too radioactive?

Mr. **Walton**. That's what I mean.

Senator **Ford**. So, you are saying that they cannot bring it out of the ground at $10 a pound because they're not mining in the lake.

Mr. **Walton**. I'm not absolutely sure, but I think that is correct.

Senator **Ford**. If the Canadians are scheduled to bring additional production on line at Key Lake and other sites in Saskatchewan in the 1990s, if they cannot produce the current price of $10 a pound, doesn't this indicate that the Canadian production is being subsidized by their government?

Mr. **Walton**. Well, I think the only problem with that train of thought is that there are contracts signed for long-term deliveries in the world and only a certain proportion is spot. So, there are still—

Senator **Ford**. That is primarily in Ontario now, not in Saskatchewan.

Mr. **Walton**. Well, as I say, we do not collect information on the contracts between Canada and Europe. So, I can't firmly speak about their contract terms.

Senator **Ford**. Mr. Sewell, while we are in this position, do you know anything about spot market prices and shipments to other countries, and what that price might be, and if there is any subsidizing of uranium enrichment extraction by the Canadian government?

Mr. **Sewell**. Senator, that is not my area of expertise, and my understanding is that the spot market price is around $10 a pound for uranium today. I can't definitively conclude, nor do I have any information with respect to, whether or not that represents a subsidy by the seller or the supplier.

Senator **Ford**. It's suspect though, isn't it? Don't answer that. [Laughter.]

Mr. Merklein, what are EIA projections of prices through the end of this century?

Mr. **Walton**. If I may answer that question. In our report about the viability of the industry, we present projections which are in the teen numbers through the 1990s and then——

Mr. **Geidl**. I have it here. Under current market conditions—we can provide this for the record, Senator. There's a long list.

Senator **Ford**. I would be happy for you to do that, but highlight it for me.

[The information follows:]

Projected Data for the U.S. Uranium Industry Under Current Market Conditions

Table E1. Long-Term Contract and Spot Market Prices for Uranium Under Current Market Conditions, 1970-2000
(Constant 1987 Dollars per Pound U_3O_8)

Year	Spot Market Price		Long-Term Contract Price	
	Actual Values	Projected Values	Actual Values	Projected Mean Values
Historical[a]				
1970	16.60	–	24.10	–
1971	15.30	–	23.10	–
1972	14.80	–	23.70	–
1973	15.10	–	22.60	–
1974	24.00	–	28.90	–
1975	47.10	–	41.60	–
1976	74.50	–	54.10	–
1977	75.20	–	53.60	–
1978	71.80	–	52.20	–
1979	65.10	–	49.50	–
1980	44.50	–	40.40	–
1981	30.20	–	33.20	–
1982	23.50	–	28.90	–
1983	26.10	–	24.60	–
1984	19.20	–	25.60	–
1985	16.50	–	24.00	–
1986	17.50	–	18.60	–
1987	16.80	–	17.90	–
Projected				
1988	–	14.80	–	16.00
1989	–	16.50	–	17.60
1990	–	17.40	–	18.50
1991	–	17.60	–	18.70
1992	–	18.00	–	19.00
1993	–	18.40	–	19.50
1994	–	19.30	–	20.30
1995	–	20.50	–	21.50
1996	–	22.00	–	22.80
1997	–	23.10	–	24.00
1998	–	24.40	–	25.20
1999	–	25.50	–	26.20
2000	–	26.30	–	27.00

[a] Average Nuexco exchange value for the year indicated.

Note: Figure 5 is a graph of these values.

Sources: Historical – Nuexco, *Monthly Report on the Nuclear Fuel Market* (Denver, Colorado, January 1988); Projections in this table were derived using the Uranium Market Model and methodology described in Appendix C.

Mr. Geidl. They range from 1988 long-term contract prices at $16 a pound reaching $27 in the year 2000. Spot market prices—these, of course, can't be believed today because they are out of date. But at that time we projected spot market prices in 1988 from $14.80 and reaching $26.30 by the year 2000. And, of course, the current spot market price is considerably lower than that, Senator.

Senator Ford. What causes the spot market prices to be that low, John?

Mr. Geidl. There are many factors that affect that——

Senator Ford. Well, give me a few.

Mr. Geidl. There are surplus uranium inventories on the whole world market, Senator.

Senator Ford. A lot of Russian materials into the world market?

Mr. Geidl. There is Russian material. There is Chinese material.

Senator Ford. Russian material, Chinese material.

Mr. Geidl. There is South African material going to other parts of the world, Central African, there are many sources of this material.

Senator Ford. EIA's data is consistent with the statement of the U.S. uranium industry that it has undergone cycles of boom and bust since its inception. The EIA data indicates that production in the domestic uranium industry will fall off modestly before increasing slowly and leveling off in the 14 million pound range as we move into the next century. Do you think that this indicates that the industry is moving into some kind of economic equilibrium?

Mr. Walton. Well, we do know that as we move toward the end of the century, the demand for the uranium and the supplies of uranium will be more in balance. If the companies can make it till then, it's possible. It also depends on the future of nuclear power after the year 2000, which is very difficult to project.

Senator Ford. How many Canadian uranium companies are government owned?

Mr. Walton. Well, there is a company called Cameco which was just privatized. I don't think it is completely privatized, but it dominates the world supply. And they are trying to sell shares and have it be a private corporation.

Senator Ford. Why don't you all provide for the record what percentage of production these government-owned companies represent and would you say that this indicates significant government participation in the Canadian market? So, we will give those to you in writing and you can answer those.

[The information follows:]

The largest Canadian uranium company, Cameco, was formed on July 1, 1989, by a merger of Eldorado Nuclear Limited (ENL), a Crown Company, and Saskatchewan Mining & Development Corporation (SMDC), a company owned by the provincial government of Saskatchewan. The new company is jointly owned by the federal government (38.5 percent) and the provincial government (61.5 percent).

Canadian production in 1988 was 32.4 million pounds U_3O_8. Cameco produced 15.4 million pounds U_3O_8 in 1988, representing about 48 percent of total Canadian production. This 48 percent share is large. However, Cameco is subject to federal and provincial income taxes at the same rates as any privately owned company and does not enjoy any special privileges as far as its long-term debt is concerned. There is an intent by both governments to privatize Cameco through a series of share offerings in the next seven years.

Senator **Ford**. What is the quality of the Canadian uranium ore particularly that produced in Saskatchewan compared with the grade of ore found in the United States?

Mr. **Walton**. Well, our ore grade was 1.3 percent last year, and theirs was, I believe, in the 1 to 10 percent range.

Senator **Ford**. One to 10 percent. I don't quite understand 1 to 10 percent when ours is 1.3.

Mr. **Walton**. I'm hedging because I don't know for sure exactly what it is. I'd be glad to find it out.

Senator **Ford**. This is the Energy Information Agency, and we're having a hard time coming up with some answers.

Mr. **Walton**. Well, we don't monitor closely——

Senator **Ford**. What do you monitor closely?

Mr. **Walton**. We monitor the activities of the uranium industry in the United States, the utilities, their imports, their exports, and their reserve holdings.

Senator **Ford**. You don't take hold of anything, though, until it becomes the property of an American industry?

Mr. **Walton**. Right.

Senator **Ford**. So, you don't know where it comes from, how it got here or anything else.

Mr. **Walton**. We know the country of origin of uranium purchased by U.S. companies that is imported into the United States.

Senator **Ford**. Mr. Merklein, your testimony focuses on the EIA viability criteria of imported commitment dependency. Can you please summarize how the American uranium industry fared on the other three criteria? Why don't you just give that to me in writing?

Mr. **Geidl**. It is attached to Dr. Merklein's longer statement, Senator.

Senator **Ford**. Well, let's talk about flag swapping. Please describe the industry practice of flag swapping for the committee. Is it legal?

Mr. **Geidl**. Yes, it is legal, Senator.

Senator **Ford**. In all cases?

Mr. **Geidl**. I don't know of a case where it is not legal.

Senator **Ford**. What about swapping with spent fuel?

Mr. **Geidl**. I don't believe you can do that, no, Senator. When I answered the first question, I was thinking of swapping of the uranium in the same form such as UF6 for UF6. There are restrictions on what you can swap.

Senator **Ford**. You can swap 6s for concentrates?

Mr. **Geidl**. I'm not sure on swapping 6s for concentrates.

Senator **Ford**. I think you can. You can make a conversion of the value.

Mr. **Geidl**. Well, you could do that, yes.

Senator **Ford**. We are getting a little nitty-gritty now, aren't we?

Mr. **Geidl**. Yes, sir.

Senator **Ford**. What percentage of transactions involves swaps?

Mr. **Geidl**. We don't have a figure on that. We are looking into that at the present time.

Senator **Ford**. Does EIA monitor the swaps?

Mr. Geidl. We don't monitor the swaps. The swaps internally in the United States are monitored in the DOE-NRC 741 system. They are reported internally in the United States.

Senator Ford. Is it possible for the U.S. to keep track of swaps that occur outside the United States that do not involve U.S. companies?

Mr. Geidl. I don't know if it is possible to track something outside the United States which are transactions beyond our reach.

Senator Ford. Well, then you are saying to me it is impossible to determine the origin of uranium that is imported into this country then, isn't it?

Mr. Geidl. I didn't say that.

Senator Ford. Well, that's what I understood you to say.

Mr. Geidl. If a swap is legal——

Senator Ford. If a swap is legal.

Mr. Geidl. If a swap is legal and you are allowed to swap the origin. Now, if you are asking can we track the genealogy of the atoms of uranium, no, we cannot.

Senator Ford. The only thing you see then is the last swap.

Mr. Geidl. That would make sense.

Senator Ford. That would be it.

But NRC sees all companies——

Dr. Merklein. When we import, we know the nationality of the material that comes in.

Senator Ford. When we import.

Dr. Merklein. Yes.

Senator Ford. That's an American company.

Dr. Merklein. If there is some swap that legally took place in Europe early in the chain, we may not detect this, and we probably would not be able to detect it no matter what the authority that we might have. But when the material enters this country, we know what its nationality is.

Senator Ford. You know what nationality it is.

Dr. Merklein. Yes, sir.

Senator Ford. How much Russian uranium is coming into this country then?

Mr. Geidl. Senator, we have a figure for that. We would be pleased to share that with you in confidence. We have a problem with the number in that it will reveal private company identification.

Senator Ford. I will accept that. So, that does give us some indication that something is going on. And what we would say down in west Kentucky, something about that ain't right.

Dr. Merklein. Well, Senator, the fact that we can't reveal it also reflects that it is likely to be a very small number because the smallness of the number is what compromises the individual companies involved. But we will furnish that for you in a confidential letter so as to not disclose proprietary information.

Senator Ford. Well, it could be like a footprint on your front lawn, couldn't it? After the mailman gets through walking on it, you have a path.

Dr. Merklein. I doubt it, Senator. I really believe that material that does come into this country we do capture as to its nationality.

And the Russian portion of it is so small that we cannot reveal the number without compromising the identity of the company.

Senator FORD. We will have some additional questions for you for the record, and I'll get those to you promptly and hope that you can give me a prompt answer.

Mr. Sewell, does the Department of Energy believe that a domestic supply of uranium is important to this Nation's energy security and why?

Mr. SEWELL. Yes, we do. Nuclear energy provides about 20 percent of the source of electricity supply in this country, and dependence on foreign sources of supply of any energy commodity represents a concern. We are very interested in seeing that a viable, strong, and healthy uranium industry exists in the United States in order to support this vital industry.

Senator FORD. Before I go any further, I want to thank you for your statement here today. I understand it was long and hard to come by, and I compliment you.

Mr. SEWELL. Thank you.

Senator FORD. Does the DOE believe that the proposal in Amendment 10 to revitalize the uranium industry is consistent with the letter and the spirit of the Canadian Free Trade Agreement?

Mr. SEWELL. The proposal in Amendment 10?

Senator FORD. Yes.

Mr. SEWELL. Yes.

Senator FORD. That's a fine answer. [Laughter.]

What increase in production do you believe will result from the purchase program contained in Amendment 10?

Mr. SEWELL. That is a difficult question to answer in definitive terms because the uranium purchase program defined in Amendment 10 represents a $750 million purchase program. The quantity of uranium purchased will obviously depend upon the purchase price that the uranium enrichment corporation or the government can get. Depending upon whether the prices are $15 a pound, $20 a pound, $25 a pound or $30 a pound, the variance in the total quantity of uranium purchased will be great.

Under a circumstance where there is an average price of $25 a pound, for example, we can assume that 30 million pounds would be purchased. That would represent an increase of about 6 million pounds per year. At today's rate of production from the domestic industry, that would represent about a 50 percent increase in production.

Senator FORD. The DOE enrichment program is slated to receive the uranium that the government would purchase under Amendment 10. What monetary benefits will the DOE realize from the use of that ore?

Mr. SEWELL. That ore would be most valuable if used as one of the two inputs for the enrichment process, the other being electricity. Depending upon the economic variation between the cost of electricity and the cost of the uranium, the optimum ratio of electricity to uranium will vary.

Based upon today's estimates of the cost of electricity to feed the enrichment plants, we anticipate the breakeven cost to be about $10 a pound. That means, if you purchase uranium at $10 a pound, it would offset the cost of electricity for the equivalent amount of the end product of enriched uranium. Thus, the benefit of the uranium would be basically $10 per pound times the number of pounds used.

As another example if one purchased 30 million pounds and utilized it over time, that would represent a cost avoidance (a cost indifference) so to speak, of $300 million.

Senator Ford. I am trying to run some things around. The uranium enrichment corporation in the bill is scheduled to pay $450 million a year.

Mr. Sewell. Total.

Senator Ford. Total, yes, total.

And then your figures, which you hope are average or fairly conservative I hope, will produce about $300 million. So, then we are just $150 million off.

Mr. Sewell. That's correct.

Senator Ford. Would you say that's a pretty good deal? You can answer that with one word again. [Laughter.]

Well, at least it is an arrangement whereby, everything being equal, it appears that it can be financially viable.

Mr. Sewell. If I can clarify a little: The arrangement improves the less expensive the uranium is to purchase and, thus, the greater the quantity of uranium one can buy. Again, for example, if one could purchase 50 million pounds from the purchase program, then the savings, or the cost avoidance, would be $10 a pound times 50 million pounds, or therefore $500 million.

Senator Ford. And a $50 million profit.

Mr. Sewell. That's correct.

Senator Ford. How large is the DOE stockpile of enriched uranium, and how long do you think it would be before the stockpile will be depleted?

Mr. Sewell. Our stockpile of enriched uranium, the excess amount, will be completely depleted by the end of this fiscal year, that is, by September 30, 1989.

Senator Ford. What do you mean by excess?

Mr. Sewell. We have need for a working inventory, that is, an amount of enriched uranium that is available to meet customer orders. There is also a minimum amount of inventory necessary in order to ensure a smooth, continuous and timely supply to customers. That quantity varies, depending not only upon the size of the production, but also of the sales that are needed each year. In essence, about 4 million SWUs of enriched uranium is considered the minimum working inventory level. We will be at 4 million or lower by the end of this fiscal year.

Senator Ford. Is there a government stockpile of natural uranium?

Mr. Sewell. Yes, sir. There is a stockpile of uranium that is allocated to the government and a stockpile of uranium that is allocated for commercial use.

The quantity of uranium that is specified for defense use is about 53 million pounds as of October 1 of last year. By the end of this year, that quantity will be about 50 million pounds.

The amount of inventory that is available to be applied for commercial use as of October 1, 1988, is about 32 million pounds. We are utilizing that uranium this year, so that by the end of fiscal year 1989, the total balance will be approximately 19 million pounds of uranium.

Senator **Ford**. So, we are talking about less than half of your present stockpile will be available for the next fiscal year. And that would also be about half of the utility needs also for one year. Correct?

Mr. **Sewell**. The utility needs for natural uranium are about 35 million to 40 million pounds, depending upon the assays of the uranium that they select for enrichment. So, the 19 million pounds available at the end of this year is about half of that which customers normally deliver in a year.

Based on our operating plan, we anticipate completely depleting the commercial inventory by 1991.

Senator **Ford**. I'm going to back off a little bit now and turn it over to my friend, Senator Wallop.

Senator **Wallop**. Thank you, Mr. Chairman.

Mr. Sewell, I was pleased with your answer. If the Uranium Revitalization Act is consistent with the Canadian Free Trade Agreement, can you determine any reason why we should not enact it?

Mr. **Sewell**. As I stated in the testimony, the Administration has some reservations with respect to Amendment 10. Senator Domenici introduced that amendment, and he acknowledged that any final version of that amendment would have to be negotiated again with all interested parties. He referred to that Amendment 10 as the basis for further discussions.

One of our reservations, quite frankly, is that we understand no consensus exists today with respect to the three-legged or triad arrangement.

Senator **Wallop**. Wherein are you searching consensus? Some of us are quite consensual.

No, I'm serious. What do you require for a consensus? Are you talking within the industry?

Mr. **Sewell**. One of the predominant requirements for a package involving enrichment and uranium, is the participation and support of the utility industry. As indicated in amendment 10, a significant portion of the financial commitment and resources are required from the utility industry. Their support and endorsement of that amendment, or any variation of it is important in building the necessary consensus and support to carry this package forward toward enactment in Congress.

One of the reasons we have a reservation with amendment 10 is that we are very interested in seeing enrichment legislation passed. We believe that there is a consensus on enrichment. To the extent there isn't a consensus on the other part of the package, we feel that this could probably encumber prospects for that legislation being carried forward.

Senator **Wallop**. That anxiety may be the fertilizer by which we can make the garden of consensus grow on the other side as well. And I say that because at one time the utility industry was behind this, and at one time the Canadian ambassador at least gave representations to those of us who were interested that this would not require renegotiation. That was last year on the threshold of enactment of the Free Trade Agreement. I would hope and anticipate that he at least might keep that word.

If we do not modernize the enrichment capacity of the United States, will other countries fill the market void?

Mr. Sewell. We believe that the potential and the opportunity for that happening is greatly enhanced if we do not modernize.

Senator Wallop. Then surely the American utility industry, as well as the American Government, looking down the road and not just at the immediate view of their navel, would have to anticipate that such a consequence might in the long run be endlessly more threatening to them than the immediate arrangements that might be required to make this come about. Would you agree with that?

Mr. Sewell. Yes, that sounds very reasonable.

Senator Wallop. The long-range view of it is, frankly, in their long-range interest as well as it is in the long-range interest of the United States. Increasing dependence upon foreign sources for the very basis of our energy mix and foundation seems to be just a terribly imprudent thing from no matter which perspective the energy world you wish to enter, whether it's the government's world, the producer's world, the utility world, the refining world. In fact, all of these things have a dependence upon a certain domestic predictability.

I have a question here and then I will submit a couple of questions for the record, Mr. Sewell.

But the system that we use in the United States to set spot market prices for natural uranium and enriched uranium is interesting. The reason that I believe that this is important is that I'm afraid that certain of the companies that might use what is basically known in the rest of the market world as insider information in setting spot market prices or inside knowledge of spot market prices to manipulate the market for their own gain. If they do have this, they have the potential of costing I think American ratepayers tens of millions of dollars. It may also be responsible for the rather astonishing fall from $17 to $10 per pound.

Let me ask you this. It is my understanding that there are essentially three companies that publish the prices which the industry uses. Is that correct?

Mr. Sewell. I believe that is correct.

Senator Wallop. And these companies have within the last several years taken on an apparent new role in the marketplace. In the past, there were a few companies which acted as brokers bringing together buyers and sellers and they got a quarter a pound commission. Now some of those same companies are acting as traders rather than brokers and buy and sell uranium as well as reporting the spot market prices.

Is that a situation that you understand to exist?

Mr. Sewell. I understand that does exist.

Senator Wallop. One of these companies accounts for 88 percent of all the spot market transactions. Is that the current figure approximately?

Mr. Sewell. I'm sorry. I don't know if that is correct.

Senator Wallop. Could we ask you to verify that or provide the correct figure?

Mr. Sewell. Yes, I will provide that information for the record.

[The information follows:]

We are not in a position to determine the percentage share of each of the firms which act as brokers to bring buyers and sellers together, but from the information we do have, 88 percent of all spot market transactions for one of those firms does not appear to be correct. We estimate that the total spot market transactions of all three of these trading companies account for about 60 to 70 percent of all spot market transactions. It is also generally known that one of the companies has a larger market share than the others.

Senator **Wallop**. It is also our knowledge that none of these companies is publicly held so that their books are unavailable for review. Is that correct?

Mr. **Sewell**. I believe that is correct.

Senator **Wallop**. What I suggest we do with having laid this groundwork is provide you with a couple of scenarios and simply ask you to comment as to whether or not they are possible. I would not wish and do not wish—it is not my purpose to get into an accusation, but only for us to understand what might be possible to take place in the market that affects our economic interests, our state's economic interest very specifically.

Mr. Chairman, if I may, I just would ask consent from you that we be permitted to submit the scenarios for their comment.

Senator **Ford**. That would be perfectly all right. And we will hold the hearing open for sufficient time for them to respond, Senator.

Senator **Wallop**. One last question and that is on the question of the Soviet material. Deputy Secretary Moore has written Senator Domenici the following statements. "Your view that the EIA has a sufficient authority to collect the necessary detailed information to determine the country of origin, the amount of foreign material imported as reported by domestic company purchasers is correct." Then he goes on to say, "Upon review, EIA has concluded that the data that currently exist may be imprecise due to misreporting with respect to the total quantities of nuclear source material enriched in the USSR that has been imported into the United States."

Now, I guess my question is if you have the authority, as the deputy secretary suggests you do, why would we not seek to gain the data that is precise enough upon which to make the judgment?

Mr. **Geidl**. Senator, we have the authority. The statement that the data were imprecise regards reports which had been filed by the companies. We have followed up with those companies, and we have clarified those imprecisions. There were some mistakes in some cases as to how they reported the country of origin.

As far as the imprecision dealing with Soviet material, as stated in the letter, it has to do with how we ask the question and how they answer the question.

In the case of source material, the U308, for instance, if that is what the company purchased, that's what they report to us. If the company purchased enriched material in its enriched form, that's what they report to us. And they report the country of origin of where the enrichment took place in that case.

When it was UF6 and they sent it somewhere else in a foreign country to be enriched——

Senator **Wallop**. Then the foreign country of enrichment becomes the source?

Mr. **Geidl**. No, that doesn't become the source, but when it's filed on the DOE/NRC Form 741, both countries are reported. But as far as monitoring the domestic mining and milling industry, our effort was to track the fact that it was of foreign origin. And so, we didn't ask the other question on enrichment at the time. Not that it is of interest, it will be simple to add a question to the questionnaire. So, in the future, we will ask both questions.

Mr. **Sewell**. Excuse me, Senator, if I may offer an observation. In literal fact, all transactions entering the United States are known by their uranium and their SWU origin at the point at which they enter the United States. However, prior transactions, be they exchanges, loans, leases or some other description, which took place before the specific material entered the United States and was reported to DOE, they are unseen and unknown. From a market perspective, what is more important are the transactions overseas which enabled certain material to enter the United States. I'd like to give you an example to help clarify.

Soviet enriched material, like any other, contains both a natural uranium component and an enrichment component. It can be exchanged in Europe for an equivalent amount of enriched product of U.S.-origin material. The European holder of the U.S.-origin material would be indifferent to the origin of the enriched uranium in his possession. In addition, he may even receive a fee for making that transfer or that exchange.

Such a physical exchange is legal and it would not alter or diminish nonproliferation controls attached to either material.

By exchanging this Soviet material for U.S.-origin material, the enriched uranium product (which is literally U.S. in origin) can be received in the United States at a Soviet price, for both the uranium and the enrichment component.

The data provided to EIA are a factual "snapshot" of a part of this transaction, that is, the origin at the point of U.S. entry. However, it is not a "movie". The picture that EIA receives does not reveal the entire story of prior transactions that enable the U.S.-origin material or other type of material to come into the United States.

That represents the practicality of the market impact versus the reported facts at a specific period of time. The analogy basically is that if a tree falls in a forest, but there is no one there to hear it or report it, it still makes a noise.

Senator **Wallop**. Well, I appreciate that, and I also understand that it is not illegal. But the fact of it is that we can as a nation take no action unless we utilize the authority that we possess to try to determine the serial existence of this imported material. Otherwise, there is no point of our having any interest in it at all. I mean, if it can come in by a certain ruse that is legal, why spend all the effort to force the ruse? Why not just forget it? And I don't think that is your purpose. That is certainly not our purpose.

Senator **Ford**. Excuse me. You are talking about Russian enriched uranium replacing a stockpile that has already been moved out and when that could be moved out the next time.

Senator **Wallop**. Ours comes back, but they get a little kicker for having held it for a little while.

Senator **Ford**. I understand the kicker.

Senator **Wallop**. That is interesting, and I guess if it is worth our while to know at all, we ought to pursue the ruse. If it is not, we ought not to pursue any of the rest of it because it's not of consequence to us.

Dr. **Merklein**. Senator, that gets us to the practicality and the authority of enforcing it. There is no question but that the mechanism that Mr. Sewell described does take place, and most of the impact originates in Europe.

But if there is, for example, an inventory swap where USSR enriched material gets swapped, the Soviet material gets put into a foreign utility's inventory and non-Soviet material is removed and then shipped to the United States. It would be properly identified, of course, as non-Soviet enriched material. But the U.S. utility has no way of knowing that, at the very beginning of that chain, there was that USSR enriched material that now sits in that foreign utility's inventory. And the foreign utility would be under no obligation to report it to the United States, and this is where the rub comes in.

Senator **Wallop**. Well, I understand that. I am simply going back to the statement of Deputy Secretary Moore that they had the authority to determine that information. If they do, it ought to be exercised.

Dr. **Merklein**. We have the authority to review and check material that comes into this country. Whether it goes as far as forcing, for example, the foreign utility to reveal to the U.S. importing utility that what is at the very beginning of this chain is USSR enriched material moving into his inventory, that authority we may not have. And that issue is much broader than what the Deputy Secretary addressed.

Senator **Wallop**. Let me just leave with this concept. Is there, therefore, any point in our having any information at all as to source if it can be sidestepped by that rather simple maneuver? And I'm not blaming the utility. I understand your point that they would have no way of knowing that this is done. But what is the use in gathering the information in the first place if we can't try to find a way to identify this procedure?

Dr. **Merklein**. As a general rule, EIA is a statistical information gathering agency.

Senator **Wallop**. But the statistic is skewed if it doesn't tell you that.

Dr. **Merklein**. What I am saying is that these are the kinds of transactions one pursues through, shall we say, industry intelligence, industrial spying, if you like, sleuthing, checking on an anecdotal basis, talking to people. This is being done to quite some considerable extent, and it is where the numbers that Mr. Sewell has quoted came from. But the systematic statistical assessment of it, that I don't think we have the authority to do.

Senator **Wallop**. I'm not trying to criticize anybody. I'm trying to get at the pieces of information.

To what useful end would we put this industrial espionage?

Dr. **Merklein**. I'm sorry?

Senator **Wallop**. To what useful end would we put this industrial espionage? We find out through the gossip of the industry, but we neither find it illegal, nor do we seek to make any statistical attempt to understand its extent, but we just know that it exists. That seems in budget short times a strange way to spend money because the information may be titillating, but it is of damned little use to us.

Dr. MERKLEIN. EIA does not engage in industrial espionage, if you like, in industrial——

Senator WALLOP. I'm quoting your words, not mine.

Dr. MERKLEIN. We simply do not collect information that way.

Mr. GEIDL. Senator, may I address that—the information that we are collecting in this area is in response to section 170(B) of the Atomic Energy Act, and that is to monitor the viability of the uranium mining and milling industry.

In developing the data base and deciding upon the information we needed to assess the viability, we attempted to balance the needs for the information with the burden placed on the industry to report it. At the time we defined it, we did not see the need to track transactions beyond what the domestic utilities knew at the time and what was necessary to determine the total amount of imports that were coming into the United States and to some extent, what constituted the sources of those imports.

But to track the atoms of uranium, a fungible commodity, through every place it moves, was not something that we saw useful. And I'm not so sure that we could use it today, if we collected that kind of information.

Senator WALLOP. That was the thrust of the question that I have been trying to ask. It's not that you're doing a bad job, but since we have identified this thing and spoken about the authority of it to determine it and one thing and another, I'm just asking you to what purpose do we put that little bit of information that we presently have. And why even bother to collect it if it is not going to be possible to utilize it?

Mr. GEIDL. We have not proposed to collect information beyond what we're collecting today. We believe we are properly documenting the origin. We believe we are capturing all the imports. The answer to the question, do you have the authority to document, I think was answered directly.

Senator WALLOP. I feel that I'm sinking into a bureaucratic swamp here, Mr. Chairman. [Laughter.]

I think I saw the signpost an hour ago.

Without in any way attempting to make a judgment on the correctness of anything, I'll be damned if I know why this information is either unavailable or unuseful. And if it is both unavailable and unuseful, I'm not quite certain why we spend any time talking about it.

Senator FORD. I don't understand what you are talking about either. [Laughter.]

Let me ask a question and we will close these gentlemen out.

There has been some published data by I believe you pronounce it Nuexco, a uranium broker, that three uranium producers will produce 65 percent of western world uranium during 1989 and that the top five producers will produce 82 percent of the western world production. Does EIA have any data that will verify these statements?

Mr. **Walton**. Yes, we do. I think it would be best to provide it for the record so we can get the precise numbers.

Senator **Ford**. Are we close to the right figures?

Mr. **Walton**. I was trying to think of the three companies you are speaking of.

Senator **Ford**. Well, if you will give that to us in writing.

[The information follows:]

INSERT FOR THE RECORD

According to EIA research for the year 1988, the three top producers accounted for about 42 percent of the western world production and the five top producers accounted for approximately 57 percent of western world production.

The table below provides 1988 production of the western world's top ten producers and their respective shares of total production. The top ten producers accounted for 73 percent of total production.

1988 CONCENTRATION OF URANIUM MARKET

Company	Production (million lbs U_3O_8)	Share (percent)
Cameco (Canada)	15.4	15.8
Cogema (France)	14.2	14.6
RTZ (U.K.)	11.2	11.5
NUFCOR (S.A.)	9.6	9.9
Denison (Canada)	5.0	5.1
Uranerz (W.G.)	4.4	4.5
ERA (Australia)	4.4	4.5
Chevron (USA)	2.7	2.8
IMC (USA)	2.2	2.3
Energy Fuels (USA)	1.8	1.9
Top 10	70.9	72.9
Others	26.3	27.1
Total Western World	97.2	100.0

Senator FORD. But let me ask you an additional question. Do you believe this represents a cartel that American ratepayers should be concerned about?

Mr. WALTON. I can't really comment on that. I don't know if it is an oligopoly or a potential cartel.

Senator FORD. Well, it reminds me of a mayor that always was neutral, and then when he died, they called him natural. [Laughter.]

Dr. MERKLEIN. Senator, the statute under which we operate requires us to be neutral. We provide the numbers without any bias of any kind.

Senator FORD. Are they suspect in your mind? Can you have a personal opinion?

Dr. MERKLEIN. If I had a personal opinion, I hesitate to offer it Senator in a public hearing.

Senator FORD. What the hell am I doing up here asking you questions then?

Dr. MERKLEIN. Senator, I would be defying the mission under which EIA operates if I offer opinions beyond the statistical information that we develop.

Senator FORD. Well, what does that statistical information tell you?

Dr. MERKLEIN. Well, again, we will provide the numbers for you.

[The information follows:]

The major uranium producers participated jointly in several large uranium projects:

—RTZ Corporation PLC holds 51 percent interest in the Canadian company Rio Algom Ltd., (1988 production of 6.1 million lbs U_3O_8 in Canada and 0.6 million U_3O_8 in the U.S.A.).

—Cameco (67 percent) and Uranerz (33 percent) jointly own the world's largest operating uranium mine—Key Lake in Saskatchewan, Canada.

—Cogema (60 percent) and Cameco (20 percent) are majority owners in the Cluff Lake uranium mine, Saskatchewan, Canada.

—Cameco (49 percent) and Cogema (36 percent) are majority owners in the Cigar Lake project.

It appears that this level of concentration of production in conjunction with large inventory levels and slow demand growth will not allow producers to charge a price different from one set by market forces and, therefore, one that American ratepayers should be concerned about. Of course, it is theoretically possible for the top producers to enter into collusive agreements and act as a cartel.

Senator FORD. Well, Doctor, we are going to come to grips with it publicly or privately. And I assure you of that, and we're going to have a meeting. And if I can't get public answers out of you, I'll get them out of you privately. Then maybe I can make them public because I'm not bound by that statute.

I thank you, gentlemen, and thank you particularly, Mr. Sewell. You've done an excellent job today, and I appreciate your courtesy and hard work.

We will have two more witnesses then: Mr. Phillip Bayne, President and COO of New York Power Authority; and Gerald W. Grandey, President, Energy Fuels Corporation.

Mr. Bayne, we will take you first then and ask you for your statement. If you want to highlight it and submit it for the record, we will be glad to accept it. It's your option.

STATEMENT OF J. PHILLIP BAYNE, PRESIDENT AND CHIEF OPERATING OFFICER, NEW YORK POWER AUTHORITY, ON BEHALF OF EDISON ELECTRIC INSTITUTE, THE AMERICAN NUCLEAR ENERGY COUNCIL, AND THE AMERICAN PUBLIC POWER ASSOCIATION

Mr. **Bayne**. Yes, sir. I will highlight it. I think you have the written statement.

Senator **Ford**. That is correct.

Mr. **Bayne**. Mr. Chairman, my name is Phillip Bayne and I am President and Chief Operating Officer of the New York Power Authority. I'm here today to make a statement on behalf of the Edison Electric Institute, EEI; the American Nuclear Energy Council, ANEC; and the American Public Power Association, APPA; and the New York Power Authority.

EEI is the national association of investor-owned electric companies. Its members serve approximately 73 percent of all electricity customers in the Nation. ANEC represents over 100 domestic and international organizations having an interest in nuclear energy, and I serve on that council's board of directors. APPA is the national service organization representing 1,750 publicly owned electric utilities.

The New York Power Authority is a State public energy corporation which provides about one-third of New York State's electricity. It is the largest non-Federal public power agency in the country and generated approximately 36 billion kilowatt hours of electricity in 1988. Almost 30 percent of the total was generated at our two nuclear plants, the James A. FitzPatrick plant in Oswego and the Indian Point 3 plant in Buchanan. The power authority requires a large amount of uranium every year for these plants, and we are very concerned with the issues affecting nuclear fuel supply. My statement today concerns the supply of uranium for domestic commercial nuclear energy plants and specifically addresses Amendment 10 to S. 83.

Since its inception, the domestic uranium supply industry has operated under unique market conditions, those where production and consumption have rarely been in balance. During the 1940s, 1950s and early 1960s, uranium was in short supply.

The Federal Government was the only domestic purchaser, and it purchased all uranium available at a specified price. It was the purpose of the government purchase program to provide the incentives necessary for producers to explore and develop resources. The program was successful and led to the creation of both the domestic and foreign uranium supply industries.

The entry of the electric utility industry into the uranium market in the late 1960s and early 1970s was based on expectations of a rapidly growing commercial nuclear energy program. During this period, the government took steps to assure that a sizable domestic uranium industry would be available to supply the commercial nuclear industry as it matured.

This was accomplished by directing the AEC, which then operated the free world's only commercial uranium enrichment capacity, to operate the enrichment program in a manner that recognized the needs of the domestic uranium industry. The AEC interpreted this direction by specifying that it would only enrich domestic uranium for domestic power plants. This action is the historical link between uranium supply and enrichment issues.

As the demand for commercial uranium grew in the early 1970s, the requirements for domestic utilities to use only domestic uranium in their nuclear plants was phased out gradually over the period 1977 to 1984. Consequently U.S. utilities were free to purchase uranium in the international marketplace, and this is the situation that exists today.

If the uranium market had made a smooth transition from a government purchase program to a free market operation during the mid to late 1970s, many of the problems faced by the domestic producers might not exist today. However, a number of anomalous conditions came about in the mid-1970s that had a significant impact on the uranium supply market and resulted in sharply increased, albeit artificial, demand.

Three of these major market occurrences are well-known: the petroleum embargo in 1973, the withdrawal of the major supplier. That action created a very sudden unanticipated utility demand for uranium. And also during that period, the U.S. Government changed its contracting approach for enrichment services to long-term fixed commitment arrangements and limited the orders it would accept.

These and other events combined to result in the emergence of a seller's market which led to a dramatic increase in the price of uranium. Uranium suppliers responded to these market conditions by offering uranium only on long-term, take-or-pay contracts at very high prices. It was more than $40 a pound in the mid to late 1970s, up from only $6 a pound in 1972.

As the next decade unfolded nuclear fuel contracting during the later 1970s turned out to be quite excessive compared to the realities of actual consumption in nuclear plants. For example, utilities with many plants on delayed schedules or cancelled had a significantly reduced need for enrichment. In response the Federal Government modified its contracting arrangement for enrichment services to permit limited adjustments in order to better match the actual consumption. However, uranium suppliers retained their high-priced, take-or-pay contracts, some of which are still in effect with 1970 vintage prices. As a result of this practice, utilities accumulated very large inventories of unneeded uranium.

In order to fill that artificially large contract demand, uranium production rose to a rate significantly higher than the actual consumption rates by utilities for several years. By the early 1980s, the commercial uranium inventory reached a level of approximately an eight year supply. Consequently, as the domestic producers' take-or-pay contracts were filled, follow-on orders essentially evaporated, and the large inventories and secondary market became major factors in filling the subsequent demand.

Today those excessive uranium inventories are down to a level of about a four year supply, and they continue to be worked down. As utilities draw more uranium from their inventories over the next few years, eventually if the market is allowed to progress naturally, the production and consumption of nuclear should come into a reasonable balance. When that occurs, prices should stabilize and domestic uranium producers will be able to fill an appropriate share of the market on a competitive basis.

In the meantime, the uranium market will continue to experience important changes as it moves towards normalization. The utility industry has observed a number of such changes during the past year. These changes include the following. The free trade act. Domestic producers dropped their lawsuit against DOE. Inventories held by U.S. companies have been reduced to the four year supply. New supply contracts have been signed between uranium producers and the Japanese utilities. And domestic utilities are making significant new purchase commitments with domestic suppliers.

The nuclear industry continues to support efforts to restructure the uranium enrichment enterprise to achieve overall operating efficiencies and make the enterprise more competitive in the international marketplace. We recently reiterated our support for effective restructuring before this subcommittee in the industry testimony of April 19, 1989. Proper restructuring of the enterprise would be a practical means to retain competitive enrichment services in the United States.

However, the current proposals to restructure the DOE enrichment enterprise do not provide sufficient economic benefits for the Nation's electric customers necessary to offset the costs of an ambitious uranium revitalization and a mill tailing reclamation program. In light of the important changes in the uranium supply market, the utility industry views the $1 billion contribution by electric ratepayers as proposed in Amendment 10 to S. 83 to be a very heavy financial burden. Consequently, we cannot support the uranium revitalization program proposed in Amendment 10.

Further, the Federal purchase program in Amendment 10 would allow domestic producers to draw uranium from inventories or to reallocate uranium originally designated to fill utility contracts. There could be little incentive for producers to increase domestic production and stay in the market for the long term.

Accordingly, there are important policy questions this subcommittee must consider: should national policy be to encourage additional production of uranium from domestic deposits through a special legislative subsidy during a period when inventories are high? Or should the marketplace be allowed to move toward a condition where the inventories become normalized and a reasonable balance is achieved between supply and demand?

One hazard of establishing a temporary special subsidy for uranium production is that the inflated prices resulting from such a program could lead to the development of marginal reserves that might not be sustainable during a future period of balanced supply and demand. The past could be repeated, and we would find ourselves experiencing yet another boom-bust cycle. Nothing will have been solved, and in the end these same issues would be before us once again.

As for uranium mill tailings stabilization, a requirement to stabilize the tailings already exists and it is the legal responsibility of those who own the mill tailings. The companies that own domestic mill tailings, some of which are subsidiaries of large domestic or foreign owned companies, should have sufficient financial resources to stabilize the tailings. Nevertheless, it may be reasonable for Congress to examine on a policy basis whether an equitable and limited portion of the reclamation costs should be borne by those who received the uranium, in other words, the Federal Government, the foreign utilities and domestic utilities.

U.S. electric utilities prefer to use and will purchase domestically produced uranium that is available on a competitive basis in the free market. We believe that a domestic uranium production industry is important to our energy and national security. Utilities are willing to work with Congress in the development of a reasonable solution to address the situation faced by the uranium supply industry.

Thank you.

[The prepared statement of Mr. Bayne follows:]

Testimony by

J. Phillip Bayne

President and Chief Operating Officer
New York Power Authority

on Behalf of
Edison Electric Institute
American Nuclear Energy Council
and
American Public Power Association

to the

Energy Research & Development Subcommittee
Energy & Natural Resources Committee
United States Senate

on

Uranium Supply

May 11, 1989

Mr. Chairman and Committee Members:

My name is Phillip Bayne. I am President and Chief Operating Officer of the New York Power Authority. I am here today to make a statement on behalf of the Edison Electric Institute (EEI), the American Nuclear Energy Council (ANEC), the American Public Power Association (APPA), and the New York Power Authority. EEI is the national association of investor-owned electric companies. Its members serve approximately 73 percent of all electricity customers in the nation. ANEC represents over 100 domestic and international organizations having an interest in nuclear energy, and I serve on the Council's Board of Directors. APPA is the national service organization representing 1750 publicly-owned electric utilities.

The New York Power Authority is a state public energy corporation which provides about one third of New York State's electricity. It is the largest non-federal public power agency in the country. The Power Authority owns and operates two major hydroelectric generating plants, two nuclear power plants, a pump-storage hydroelectric project, a gas-and-oil fired plant, and five small hydroelectric projects. The Authority generated approximately 36 billion kilowatt-hours of electrical energy in 1988. Almost 30% of that total was generated at our nuclear plants, the James A. FitzPatrick plant in Oswego and the Indian Point 3 plant in Buchanan. The Power Authority requires a large amount of uranium every year for these plants and we are very concerned with the issues affecting the front end of the nuclear fuel cycle. My statement today concerns the supply of uranium to fuel domestic commercial nuclear energy plants and specifically addresses Amendment 10 to S. 83.

URANIUM SUPPLY - AN HISTORICAL PERSPECTIVE

Since its inception, the domestic uranium supply industry has operated under unique market conditions--those where production and consumption have never been in balance. During the 1940's, 1950's, and early 1960's, the Federal Government was the only domestic purchaser of uranium, and it purchased all uranium available at a specified price.

The original need for this Government purchase program was to satisfy the massive requirements of the United States' defense programs. In the early 1950's, the military's need far exceeded the world's available supply. It was the purpose of the Atomic Energy Commission's (AEC) program to provide the incentives necessary for producers to explore and develop resources. In this respect, the program was an unqualified success. It led to the creation of both domestic and foreign uranium industries and enabled the U.S. Government to purchase such a large amount of uranium that it was eventually able to phase out this program by 1970. The program resulted in the accumulation of a very large, federally-owned inventory of uranium which will satisfy all the Government's uranium requirements well into the future.

As a result of an amendment to the Atomic Energy Act--the Private Ownership of Special Nuclear Materials Act--which was enacted in 1964, American electric utilities were permitted to purchase and own uranium. The entry of the electric utility industry into the uranium market in the late 1960's and early 1970's was based on expectations of a rapidly growing commercial nuclear energy program. During this period, the Government took steps to assure that a sizable domestic uranium industry would be available to supply the commercial nuclear power industry as it matured.

To assist the producers in the transition period during the phase-out of the Federal purchase program and the gradual increase in commercial purchases, Congress encouraged the use of domestic uranium. This was accomplished by directing the AEC, which then operated the free world's only commercial uranium enrichment capacity, to operate the enrichment program in a manner that recognized the needs of the domestic uranium industry. AEC interpreted this direction by specifying that it would enrich only domestic uranium for use in domestic power plants. This action is the historic link between uranium supply and enrichment issues, and it set the stage for debates that are taking place now, decades later. As the demand for commercial uranium grew in the early 1970's, the requirement for domestic utilities to use only domestic uranium in their nuclear plants was permitted to be phased out gradually over the period from 1977 to 1984. Consequently, U.S. utilities were free to purchase uranium in the international marketplace, and this is the situation that exists today.

MAJOR MARKET DISTURBANCES

If the uranium market had made a smooth transition from a Government purchase program to a free market operation, many of the problems faced by the domestic producers might not exist today. However, a number of anomalous conditions came about in the mid-1970's that had a significant impact on the uranium supply market and resulted in a sharply increased--albeit *artificial*--demand.

Three of these major market occurrences are well known to many. The petroleum embargo of 1973 led the U.S. and other developed countries to seek paths to greater energy independence. Nuclear energy, which was at that time reaching maturity as a commercial technology, was a natural solution. The oil embargo resulted in both a major boost in utility commitments to build nuclear plants and also a major boost in commercial requirements for uranium.

A second market disturbance occurred when a large uranium supplier unilaterally withdrew from fulfilling its uranium contracts on the basis of "commercial impracticability." That action created a very sudden, unanticipated utility demand. Also during that period, the U.S. Government changed its contracting approach for enrichment services to long-term, fixed commitment arrangements and limited the orders it would accept. Since the Government held the free-world monopoly for enrichment services at that time, nuclear utilities had no choice except to abide by those terms. Most enrichment was contracted for in order to supply nuclear plants planned for construction many years into the future. Utilities not contracting for enrichment at that time risked not having fuel for future plants. As a result, it was necessary for utilities to seek large supplies of uranium to use as feed for the ambitious number of fixed commitment enrichment contracts.

These and other events combined to result in the emergence of a seller's market and a dramatic increase in the price of uranium. Uranium suppliers responded to those conditions by offering uranium only with long-term, take-or-pay contracts at very high prices --more than $40 per pound in the mid to late 1970's, up from only about $6 per pound in 1972. In addition, some utilities believed it was advantageous to enter into equity positions with suppliers to assure the future availability of uranium. Consequently, uranium contracting during that period turned out to be quite excessive compared to the realities of actual uranium consumption in nuclear plants.

As events unfolded over the next decade, actual consumption of uranium was far below the available supply. Some of the reasons for this were:

- the electricity demand growth rate dropped to an average of about 3 percent each year over a 15 year period--less than half of that anticipated in 1970;

- both oil and gas remained available at costs much lower than was predicted in the early 1970's;

- the cost of nuclear plants became much higher than had been projected as regulations became more complex, causing construction periods to become greatly extended;

- nuclear energy plant construction in the U.S. fell far short of expectations and leveled off at about 115 nuclear units; similarly, nuclear programs slowed world wide; and

- rich uranium ore deposits were discovered in Canada and Australia, adding to the world's oversupply of uranium.

URANIUM PRODUCTION AND CONSUMPTION

As a result of these events, there was a significant over-commitment for enrichment services. Utilities, with many plants on delayed schedules or cancelled altogether, had a significantly reduced need for enrichment. In response, the Federal Government modified its contracting arrangement for enrichment services to permit limited adjustments in quantity in order to better match actual consumption. However, uranium suppliers *retained* their high-priced, take-or-pay contracts, some of which are still in effect with 1970's vintage prices. As a result, utilities accumulated very large inventories of unneeded uranium.

In order to fill that artificially large contracted demand, uranium production rose to a rate significantly higher than the *actual* consumption rate by utilities for several years. By the early 1980's, the commercial uranium inventory reached the level of approximately an eight year supply. Consequently, as the domestic producer's take-or-pay contracts were filled, follow-on orders essentially evaporated, and the large inventories and the secondary market became major factors in filling the subsequent demand.

Today, those excess uranium inventories are down to a level of about a four year supply, and they continue to be worked down. As utilities draw more uranium from their inventories over the next few years, it is clear that eventually--if the market is allowed to progress naturally--the production and consumption of uranium should come into reasonable balance. During the last few years, as a result of decreasing inventories, utilities have again begun to contract for the purchase of significant quantities of uranium. In a limited survey conducted by EEI in February of this year, 18 U.S. utilities indicated they had made new commitments during 1987 and 1988 to purchase over 32 million pounds of domestic uranium. Most of that uranium was committed under long-term contracts and not simply obtained on the spot market. This is significant, since the uranium spot market price is currently between $10 and $11 per pound, and the average delivery price for all domestic uranium was above $25 per pound during 1988.

URANIUM SUPPLY CHANGES

As mentioned previously, several very large, high-grade uranium ore deposits have been discovered in Canada and Australia. Because of their large sizes and rich ore grades, uranium can be produced from these deposits at a lower cost than from many of the ore deposits in the United States. However, there are economical uranium ore deposits in the United States that can compete in a normal uranium market where production and consumption are reasonably balanced. When that occurs, prices should stabilize and domestic uranium producers will be able to fill an appropriate share of the market on a competitive basis.

In the meantime, the uranium market will continue to experience important changes as it moves toward normalization. The utility industry has observed a number of such changes during the past year. These changes include the following:

- inventories held by U.S. companies have been reduced to about a four year supply and continue to be worked down;
- new supply contracts have been signed between U.S. uranium producers and Japanese utilities;
- domestic utilities are making significant new purchase commitments with domestic suppliers;
- the Free Trade Agreement (FTA) has been completed between the United States and Canada;
- the U.S. Supreme Court ruled in favor of the Department of Energy (DOE) on an important point of the domestic producers lawsuit; and
- subsequent to the implementation of the FTA, the domestic producers dropped their lawsuit.

NATIONAL POLICY CONSIDERATIONS

The nuclear industry continues to support efforts to restructure the uranium enrichment enterprise to achieve overall operating efficiencies and make the enterprise more competitive in the international marketplace. We recently reiterated our support for effective restructuring before this Subcommittee in the industry testimony of April 19, 1989. Proper restructuring of the enterprise would be a practical means to retain competitive enrichment services in the U.S.

However, the current proposals to restructure the DOE enrichment enterprise do not provide sufficient economic benefits for the nation's electricity customers necessary to offset the costs of an ambitious uranium revitalization and a mill tailings reclamation program. In light of the important changes in the uranium supply market, the utility industry views the $1 billion contribution by electric ratepayers as proposed by Amendment 10 to S. 83 to be a very heavy financial burden. Consequently, we cannot support the uranium revitalization program proposed in Amendment 10.

Further, the Federal purchase program in Amendment 10 would allow domestic producers to draw uranium from inventories or to reallocate uranium originally designated to fill utility contracts. There could be little incentive for producers to increase domestic production and stay in the market for the long term. Accordingly, there are important policy questions this Subcommittee must consider: Should national policy be to encourage additional production of uranium from domestic deposits through a special legislative subsidy during a period when inventories are high? Or, should the marketplace be allowed to move toward a condition where the inventories become normalized and a reasonable balance is achieved between supply and demand?

One hazard of establishing a temporary special subsidy for uranium production is that the inflated prices resulting from such a program could lead to the development of marginal reserves that might not be sustainable during a future period of balanced supply and demand. The past could be repeated, and we would find ourselves experiencing yet another boom/bust cycle. Nothing will have been solved, and in the end these same issues would be before us once more.

As for uranium mill tailings stabilization, the Federal environmental regulations appear to be excessive when considered on a true cost/benefit basis. However, a requirement to stabilize the tailings *does* exist, and it is the legal responsibility of *those who own the mill tailings*. The companies that own domestic mill tailings--some of which are subsidiaries of large domestic or foreign-owned companies--should have sufficient financial resources to stabilize the tailings. Nevertheless, it may be reasonable for Congress to examine on a policy basis whether an equitable and limited portion of the reclamation costs should be borne by those who received the uranium--including the Federal Government, foreign utilities, and domestic utilities.

U.S. electric utilities prefer to use and will purchase domestically-produced uranium that is available on a competitive basis in the free market. We believe that a domestic uranium production industry is important to our energy and national security. Utilities are willing to work with Congress in the development of a reasonable solution to address the situation faced by the uranium supply industry.

Senator **Ford**. Thank you, Mr. Bayne.

Mr. Grandey, if you would present your statement, and then I'll have a few questions for both of you.

STATEMENT OF GERALD W. GRANDEY, PRESIDENT, URANIUM PRODUCERS OF AMERICA

Mr. **Grandey**. Thank you very much, Mr. Chairman, members of the subcommittee.

I would like the record to show that I am here not only on behalf and as President of the beleaguered producer, but also on behalf of the producers association which is comprised of about 13 uranium mining and milling companies, those that are left both operating and hope to operate in the country.

In addition to my formal comments, which I would ask be entered into the record——

Senator **Ford**. They will be included in full, Mr. Grandey.

Mr. **Grandey**. Thank you very much, Mr. Chairman.

I would like also to include in the record the comments filed on behalf of the producers association as part of the section 232 study that is being conducted by the Department of Commerce. I think in that submission you will find a lot of information about the struggles of the industry over the last eight or so years and the difficulties that we have been facing. So, with your permission, I would like to——

Senator **Ford**. It's a very interesting report, Mr. Grandey, and has a lot of information we were trying to get EIA to give us.[1]

Mr. **Grandey**. Thank you very much, Mr. Chairman.

We appreciate, sir, the support that we have had from this committee over the last several years. This has been a long and arduous process, as you well know. Twice last year we passed legislation both out of the committee and through the full Senate that dealt with two issues, the revitalization of the uranium industry, as well as the reclamation of active site mill tailings.

This industry is a creature of legislation. The investments were made at the invitation of Congress back in 1964 with the assurance, because of the newness of the nuclear power business and the uncertainty associated with a brand new business, that this industry would have viability and the viability was to be guaranteed, if you will, by the Atomic Energy Commission and its successor, the Department of Energy.

Over the years, the experiences of this industry are well-documented in that as people have indicated, artificial demand created a large inventory buildup in the decade of the 1970s. And when the nuclear power program faltered, that inventory began to come back into the market displacing production and driving prices from $40 a pound down to a level of about $17 a pound.

When the producers turned to the Department of Energy for relief under section 161(v), they were rebuffed and were forced to turn to the Federal courts for relief under that statute. Contrary to some of the statements that have been made here today, Mr. Chairman, the producers won the litigation with the Department of

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[1] See Appendix II.

Energy twice in Federal court. We were asked by the Supreme Court to return to the district court to demonstrate that enrichment limitation would, in fact, restore the industry's viability.

Senator **Ford**. While I'm right here, why did you withdraw your lawsuit?

Mr. **Grandey**. That's exactly where I'm headed, sir.

We, as I say, were directed by the Supreme Court to return to the district court and demonstrate why enrichment limitations would restore the industry's viability.

The industry was prepared to do that. It was prepared to engage in another series of litigation that probably was going to take two to four years. But with the passage of the Canadian Free Trade Agreement, this body, the U.S. Government, once again mooted, if you will, the efforts of the industry by exempting Canadian uranium from the restrictions under section 161(v). With the passage of that legislation, with the exemption for Canadian uranium, it was impossible for us to demonstrate that section 161(v) would be effective, and for that reason we abandoned the litigation.

This committee has held numerous hearings in the past not only about the impact of the Canadian trade agreement and its unfairness to this industry, but also hearings on the extent of subsidies for Canadian produced uranium, subsidies which this industry has been forced to compete against and subsidies which the Canadian Free Trade Agreement did not address. And last year in hearings before this committee, it was noted that the issue of subsidies was not addressed, and the opinion was that in the future even though the trade agreement was going to be passed, that those subsidies needed to be looked into and needed to be addressed. Nevertheless, that has not been done.

Recognizing that the Canadian Trade Agreement was, in fact, passed, it became effective on the first of January of this year. That was a reality that we were dealing with at the end of last year when a consortium of utilities, the administration and producers got together and designed the legislation that is before you today, the amendment that is before you today. It was found to be, as Mr. Sewell indicated, in compliance with the trade agreement with Canada. The Canadian government testified as such. It remains in compliance as an approach that can be pursued under and within the legal strictures of the Canadian trade agreement.

It is a rather nifty approach. It's a purchase program, yes, but it's a purchase of a commodity that, as Mr. Sewell indicated, can be utilized by the enrichment enterprise to save its electricity costs. It is not another government stockpile program, not transferring stockpile or inventory from producers or utilities into another government stockpile. It is material because of the depletion of their own stockpiles on the commercial side that can be used to save electricity costs.

And for that reason, the net cost to the government, while we talked last year in terms of a $750 million purchase program, with the savings that the Department of Energy experiences in using the material purchased, the net cost, as we saw it, to the U.S. Government was on the order of $100 million to $150 million assuming a $20 uranium price.

Mr. Chairman, I would urge that this committee continue to treat this legislation as a comprehensive package. That is exactly the way these issues have been dealt with over the past five or six years. The health of the enrichment enterprise is inextricably related to the health of the producers and vice versa. These issues are not simple issues, but they have grown up together. And as stated by other members of the committee earlier, we think that the package should stay together, be treated together and be acted on together by this committee and by the full body.

Finally, sir, with respect to the tailings program, the tailings problem has not gone away. We are still being buffeted by regulations, by new proposals from regulatory agencies that make, if anything, reclamation more costly today than it was last year, regulations that have run amuck in terms of what this industry is being forced to spend, has to come up with. These are regulations that began in 1978 long after the majority of these tailings were produced. And we think, as the Government Accounting Office has recognized, that it is only fair that the users, the people that benefited from the production of those tailings, bear their full share. And in arriving at the legislation with the concurrence of the utilities and the administration last year, we designed a formula that all parties at that time felt was fair.

Mr. Chairman, that concludes my testimony. I would be happy to answer any questions that you might have.

[The prepared statement of Mr. Grandey follows:]

TESTIMONY OF GERALD W. GRANDEY

PRESIDENT, URANIUM PRODUCERS OF AMERICA

BEFORE THE SUBCOMMITTEE ON

ENERGY RESEARCH AND DEVELOPMENT

SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

MAY 11, 1989

Mr. Chairman and Members of the Subcommittee. My name is Gerald W. Grandey. I am President of Energy Fuels Nuclear, Inc., and President of the Uranium Producers of America, a trade association of domestic uranium mining and milling companies.

We welcome this opportunity to testify today in support of legislation to revitalize the domestic uranium industry.

Since 1964 it has been the policy of the U.S. government to maintain a viable uranium industry. Section 161(v) of the Atomic Energy Act gave the industry this assurance and substantial investments were made in reliance on its continuing as official policy. Unfortunately, the effectiveness of this policy has been substantially undermined by recent administrative and legislative actions involving the enrichment program and trade initiatives.

For almost five years, members of the Senate Energy Committee have been actively involved in efforts to balance these actions with legislation designed to fulfill the commitment made in section 161(v) by restoring a viable uranium industry. You have long recognized that a strong domestic industry is vital to national defense and energy security. Under the bipartisan leadership of this Committee, the Senate last year twice passed legislation which would have done much to assist uranium producers. We are grateful for this continuing support.

UPA continues to believe that this Committee should address the problems affecting the front end of the nuclear fuel cycle on a comprehensive basis. Clearly, the United States can only serve its national security interests and compete in world fuel markets if the entire front end of the nuclear fuel cycle is alive and well. There can be no doubt that a vigorous and competitive enrichment program is critical to the future health of the domestic uranium industry. For this reason, we strongly support the creation of a government enrichment corporation to manage the Federal enrichment program on a commercial basis.

Members of this Committee are well aware of the depressed state of the uranium industry. The Secretary of Energy has found the industry to be non-viable for four consecutive years, 1984 through 1987. Since the condition of the industry continues to worsen, it seems highly likely that the industry will also be declared non-viable for calendar year 1988.

Production levels for this industry in 1988 are estimated at about 13.5 million pounds, down from a peak of 43 million pounds in 1980. If current market conditions persist, U.S production levels will sink to 7 to 9 million pounds in the next three or four years. At this level, most of the country's uranium mills will be decommissioned and mines reclaimed. Only 4 of the nations's 26 mills are now operating and all but 5 underground mines have been shut down.

The industry's problems today have been caused largely by government enrichment policies which created and then caused the liquidation of huge inventories; by the importation of large quantities of subsidized uranium; and by the marketing of heavily discounted production from communist countries. The combination of these factors has driven the market value of uranium from over $40 in 1980 to the current price of less than $11 a pound. In constant dollars, this is the lowest value for uranium in the history of the industry -- well below the average production costs for western world suppliers.

The problem, Mr. Chairman, is not lack of demand. Western world demand and production came into balance in 1985. Since that time, demand has actually exceeded production. In this country alone, utilities use 40 million pounds of uranium a year.

The problem is not the lack of ability to compete either. Like most production centers, the U.S. has both high and low cost reserves. Arizona, Wyoming, Texas, Colorado, Utah, New Mexico, Florida and Washington all have deposits capable of competing with most of the world's resources on a cost basis. U.S. producers have, however, had great difficulty in competing with foreign producers who enjoy substantial government subsidies and support. This Committee has already received testimony on the nature and extent of this support in Canada and elsewhere.

A more recent threat to the domestic uranium industry comes from sales of significant quantities of uranium and enriched uranium by non-market countries, principally the Soviet Union and China. The Chinese have recently made their first uranium sales in the U.S. and are reported to have a substantial stockpile on hand for export.

The impact of Russian sales is even greater. In response to written questions at the time of his confirmation hearings, Secretary of Energy Watkins said the Soviets had substantial excess enrichment capacity and, he understood, the Russian enriched uranium was being offered in the U.S. at prices nearly 50 percent lower than DOE's current price.

With respect to uranium, Secretary Watkins said that about $140 million in sales that could have been met by the U.S. uranium industry potentially may have been displaced during the 1986-1988 period. DOE estimates that as much as $800 million in U.S. uranium sales over the 1990-1998 period could be displaced by the Soviet Union, or other foreign producers.

In 1987, this Committee approved comprehensive legislation to restore a viable uranium industry by imposing an interim program of charges for the use of foreign uranium through the year 2000. This bill, which was supported by the uranium producers and the utility industry, also created a system for funding the reclamation of mill tailings at active mill sites and reorganized the enrichment program by creating a government enrichment corporation to run the program as a commercial enterprise. It passed the Senate by a vote of 62-28 in March, 1988.

At the same time the Committee was considering this legislation, the Reagan Administration was negotiating the Free Trade Agreement with Canada which left untouched the pervasive system of subsidies for the Canadian uranium industry, but exempted Canadian uranium from any future restrictions on U.S. enrichment of foreign uranium.

Recognizing that this exemption could devastate the U.S. uranium industry -- and also because it opposed fees for the use of foreign uranium -- the Administration proposed instead a five-year $750 million purchase program for domestic uranium.

Under this compromise, which was passed by the Senate in July of last year, the Secretary of Energy would have purchased domestic uranium from a Uranium Revitalization Fund which would also have been used to fund the reclamation of active site mill tailings. The Fund would have been financed by a $450 million contribution from U.S. Enrichment Corporation revenues, a $300 million contribution from uranium producers and a $1 billion contribution from the licensees of nuclear reactors. One billion dollars would have been available from the Fund for the reclamation of mill tailings in accordance with existing regulations.

It is this proposal, which was supported last year by the utility industry, the uranium producers, the Administration and the Senate, which is pending before this Committee today.

Mr. Chairman, we recognize that circumstances have changed since last year. The new Administration is not supporting last year's compromise and the utility industry, while willing to help, testified last month that the program they supported in 1988 is now too costly.

What has not changed from last year is the depressed and declining state of the domestic uranium industry which Congress has for many years regarded as vital to national security. Unless Congress acts, the condition of the industry will deteriorate to the point where as little as 15 percent of U.S. needs will be met from domestic production.

The key factors in the industry's decline -- subsidized imports and large inventories -- will not diminish for four or five years. It is estimated that within five years inventory levels will be reduced to the customary one to two years and normal laws of supply and demand will once again operate to set prices. By then the effects of subsidized foreign production should be diminished as well. It is this five-year period, then, that the industry must somehow survive.

UPA continues to believe that some form of purchase program would provide the most effective help for the industry in this period. We have no illusions that the industry which once produced in excess of 40 million pounds a year can be restored to such a level. There is no doubt that even with a purchase program, the industry in the 1990s will look different than it did at its peak. The high cost producers will be gone and the smaller, more efficient operators will be mining uranium from lower cost reserves.

The impact of a purchase program depends of course on the funds available for purchase and the prices paid for uranium. Last year's program, based on uranium prices of $25 a pound, would have resulted in the purchase of 30 million pounds of uranium over a five-year period. This program could have restored the industry to a production level close to 20 million pounds a year, or about one-half its 1980 size. We believe this level of production would preserve a viable uranium industry during this critical period.

Because of the precipitous decline in uranium prices over the past year, it seems clear that this same level of production could be achieved with a smaller purchase program. As long as the uranium market remains in its current state, a program to buy domestic uranium on a competitive basis could well receive bids in the range of $13 to $17 a pound. If the purchased uranium is overfed to lower enrichment costs -- and DOE or the proposed Enrichment Corporation saves $11 to $13 a pound in energy costs through overfeeding -- clearly the net cost of a purchase program is now substantially lower than last year.

Mill Tailings Reclamation

In both the 99th and the 100th Congress, this Committee reported legislation to provide assistance to site owners for the reclamation of mill tailings pursuant to existing law and regulations. The Committee concluded in its 1987 report that "Cost-sharing between the site-owners and those parties that benefited most directly from uranium production -- the Federal Government and the nuclear utilities -- is an equitable approach to the problem of reclamation of uranium mill tailings."

The justification and need for sharing the costs of uranium mill tailings reclamation is rooted in the history of the uranium industry.

After World War II, the Atomic Energy Commission undertook to find and develop domestic uranium for our national defense. The AEC created a program to encourage private industry to locate and develop domestic uranium, which led thousands of Americans to become involved in exploration. The AEC program also called for the construction of uranium mills to separate the waste rock (or "tailings") from the uranium in the ore being mined. The AEC entered contracts with private companies to construct mills, and these contracts were intended to encourage the development of the industry through assurances to the millers that they would recover all the reasonable costs associated with their operations.

During the AEC program, possible health risks were not considered as a problem either by the industry or by the government, and none of the AEC contracts provided for the cost of tailings reclamation.

By 1970, the AEC's uranium procurement program for defense needs ended. The commercial market was still relatively small.

A number of the mill operators decided to cease operations at the end of the AEC procurement program. These mills are now known as the inactive sites. Other mill operators continued, supplying the developing commercial market. The mills that continued past the demise of the AEC procurement program, and those built since, are known as the active sites, even though most are no longer processing uranium ore.

When the inactive sites closed, no expensive reclamation was required or undertaken. Mill tailings were not considered a hazard. Those producers which remained open for the commercial market did not anticipate expensive reclamation would be required, and contracts with customers rarely contained cost pass-throughs of the costly reclamation EPA and NRC have now determined is required. These contracts were normally long-term.

In late 1978, Congress enacted the Uranium Mill Tailings Radiation Control Act, finding that the mills and tailings may constitute a hazard to health and environment. EPA was directed to develop environmental standards for the operation of active mills, and the closure and reclamation of both active and inactive sites.

At the time the 1978 Act was passed, it was estimated that reclamation of the active sites would cost between $120 and $180 million. Since the EPA regulations were published in 1983, these cost estimates have risen tenfold.

The Government recognized its responsibility to pay for the reclamation of inactive sites in the 1978 Act.

Many of the active sites regulated by the 1978 Act, like the inactive sites, include a large volume of tailings generated pursuant to Government contracts. There are also, of course, tailings on these active sites produced from later contracts between the millers and others in the private sector -- principally utilities. However, Congress did not devise a satisfactory way to allocate responsibility for the stabilization of the sites with these commingled tailings in the 1978 Act.

Shortly after Congress passed the 1978 Act, the General Accounting Office (GAO) recommended that Congress provide assistance for the reclamation of tailings at active sites generated under Federal contracts. This recommendation was based on several factors, including the Federal Government's role as buyer of the uranium, the fact that possible hazards from tailings were not recognized at the time they were produced, and the fact the Government procurement contracts did not require reclamation of tailings. The GAO concluded that the mill owners had acted in good faith and should not bear subsequent costs of reclamation by themselves.

When Congress enacted the mill tailings legislation, the uranium industry in the United States was expanding robustly. It appeared that the active mills could afford the tailings reclamation requirements under the 1978 Act. The situation has changed drastically since that time.

First, the industry has become severely depressed and officially declared non-viable by DOE. Secondly, the cost of mill tailings reclamation as required by current EPA and NRC regulations under the 1978 Act will be 10 times the original estimates at the time the Act was passed.

Under current industry conditions, we believe a cost-sharing arrangement is an equitable method of assuring early reclamation of the active sites and helping restore a viable industry. The financial liabilities associated with mill tailings at existing mills must be addressed before these facilities can come back into production under current environmental requirements.

Senator FORD. Thank you very much, Mr. Grandey.

Let me ask this question starting out. Have the utilities and producers gotten together to attempt to work out a solution, and are there any proposals ready to be put forward? That would go to both of you.

Mr. BAYNE. I understand that earlier this week the utilities and the miners go together, but there were no new proposals. And the utilities feel, since we're not really in that business, that the proposals ought to come from the producers and the miners. And we at that time and in our testimony on the 19th and again today—we are willing to listen to those proposals and consider any proposals that we get.

Senator FORD. Well, let me just say this. The utilities are in about the same position in this as they are on acid rain. You sure are going to get some proposals coming at you on that.

Mr. BAYNE. Yes, sir.

Senator FORD. And I think you ought to try to be a player, at least get in the loop.

Mr. BAYNE. We intend to be.

Senator FORD. Mr. Grandey, do you have some comments?

Mr. GRANDEY. If I might respond to that, Mr. Chairman. I spent a good part of last year not actively running a mining company, but talking to utilities and others about this compromise comprehensive legislation. We recognize that with the passage of the trade agreement, certain circumstances have changed and we invited the utilities back to the table.

And on Monday I was a participant in a meeting with the utilities to discuss revisions, if you will, compromises off of this package. And there were proposals, sir, that were put on the table, concrete proposals to be discussed, to be talked about, ones that we think will do the job and to achieve some revitalization of this industry.

Senator FORD. The legislation before us, Amendment 10, received a blue slip from the House in the last Congress. What do you all expect the difference to be this year, if any?

Mr. GRANDEY. Sir, we ran into some real timing problems last year. We were actively talking to the bodies about the impact of the trade agreement on our own business, the exemption to section 161(v). When we finally made it to the House, we were assigned to the jurisdiction of four separate committees. It was virtually all we could do to cover the two committees with primary jurisdiction, holding hearings, testifying, educating Members. We simply didn't have the time before the session ran out to deal with the issues that were raised that resulted in the blue slip.

I think Senator Simpson has indicated that hopefully some of those problems got resolved late in the last session with commitments made which we hope will overcome the problems. If not, we're going to have to find a way around that.

Senator FORD. Do you have any proposals that will not be viewed as taxes? That is where we ran into a lot of problem last year with Congressman Rostenkowski.

Mr. GRANDEY. The fee that we had designed we believed was not a tax. Chairman Rostenkowski, of course, had a contrary idea.

Senator FORD. He had a very contrary idea.

Mr. **Grandey**. A very, very strong idea about that.

Senator **Ford**. I was there at the meeting, very strong, as he watched the Cubs.

Mr. **Grandey**. That is one of the issues that we need to work out, if you will, with the utilities if we can keep them at the bargaining table.

Senator **Ford**. Mr. Bayne, let me ask you this question. I think you answered it, but let me be sure. The level of inventories generally that is considered optimal is around what? A four year supply?

Mr. **Bayne**. My company doesn't use that. We use about two.

Senator **Ford**. About two?

Mr. **Bayne**. Yes.

Senator **Ford**. Is the general three to four more than two, or is two the optimum?

Mr. **Bayne**. Well, in our estimation two is the optimum, but I'm sure there are utilities that think three or four is better.

Senator **Ford**. In your testimony you use the word "artificial" and I want to understand artificial demand for uranium due to the oil embargo of the 1970s. In fact, wasn't it the utility commitment to nuclear energy that increased the demand for uranium, and why was this artificial?

Mr. **Bayne**. Well, that was because of the oil embargo. Everyone in the United States pushed for energy independence, and that led to demand for nuclear reactors, which then led to the demand for the uranium. So, it was brought on by the oil embargo, and that is what made it artificial in my mind.

Senator **Ford**. The utilities support the uranium package passed by the Senate last year. Is the maintenance of a viable domestic industry no longer important to you, and if it isn't, why not?

Mr. **Bayne**. Well, as I said in my testimony, it is important to us, but there have been some changes since last year. Frankly, we feel that a billion dollar surcharge is too much for us to pass on to our ratepayers. Now, my company does not have to deal with a public service commission, but we are I think probably the only competitive utility in the country because we have no franchise area. In New York, wherever we sell our electricity, if we can't sell it cheaper than the utility that is there, we can't sell it. So, we pay particular attention to cost.

Frankly, our nuclear plants are getting close to the margin due to the fact that we are paying into a large waste endeavor. O&M costs are going up due to regulation. And this is just another cost. And frankly, I don't know how many more costs the reactors in this country can take on before they become noncompetitive.

Senator **Ford**. Something struck me here. Are you saying because of costs, that you will be forced to or will buy your uranium from foreign sources?

Mr. **Bayne**. No, sir. The only foreign source we've ever used at the power authority are the Canadians. All of our uranium purchases have either been domestic or Canadian. We stay with the DOE enrichment services even though we think they are too expensive, but we are really trying our best to stay with them because we think that restructuring will make them more competitive.

Senator FORD. You are talking about the private corporation or the government corporation?

Mr. BAYNE. Yes. We feel that may have some potential for making them competitive.

Senator FORD. I believe it will myself.

Mr. BAYNE. Yes, sir. We do want to stay with both the domestic uranium and the enrichment services if we can.

Senator FORD. It is obvious, listening to the Senators today, we are going to have a three-legged stool.

Mr. BAYNE. Yes, sir.

Senator FORD. I'm interested. What percentage of the cost of nuclear power does fuel represent? If you don't have it, you can——

Mr. BAYNE. I've got my fuel manager here.

Senator FORD. It's just a question that——

Mr. BAYNE. Could we submit that in writing because we have it.

Senator FORD. Sure.

Would that be automatically passed on to the ratepayer, whatever the cost of the fuel would be, or do you under your peculiar circumstances——

Mr. BAYNE. Under our peculiar circumstances, it would be——

Senator FORD. It would be your judgment then, wouldn't it?

Mr. BAYNE. Right. And I am here speaking for the rest of the industry, and I know that their concern is as the price goes up, they have to go to their public service commissions with something that they can justify and support. So, I would see any additional costs on their part as they would be very interested in having something that they could take to the public service commission as a reasonable cost.

Senator FORD. Mr. Grandey, the utilities state that they have committed to purchase over 32 million pounds of uranium from domestic producers. Given your annual production is only about 11 million to 13 million pounds per year, it is not clear to this Senator anyhow how you intend to meet those utility demands. Can you give this committee suggestions or do you have some suggestions that you will be selling uranium out of inventories?

Mr. GRANDEY. Mr. Chairman, inventories held by domestic producers are relatively small, but the disparity in the figures has to do with the term of the long-term contract. When one concludes that we have entered into contracts for domestic production for 32 million pounds, the contracts will extend generally from a 5 to a 10 year period. So, on an annualized basis, the quantities would be between 3 million and 5 million pounds per year, well below, if you will, the 13 million pounds per year that we currently produce. Inventories will have very little effect on that. It is simply that the 32 million pound figure extends over a 5 to 10 year period.

Senator FORD. How large are the U.S. producers' inventories?

Mr. GRANDEY. I think the last time that we tried to determine that figure, it was on the order of 4 million to 5 million pounds. And I would guess that it has gone down since the time that we took that poll.

Senator FORD. Let me get to this then. Are U.S. producers' inventories solely domestic uranium?

Mr. GRANDEY. My guess, sir, is largely. The U.S. suppliers, the U.S. producers, that have contracts, some of which as you touched on earlier which are market related and where the purchase price would now be $10 a pound, have begun to buy supplies from foreign producers because U.S. producers can't produce at $10 a pound without losing money. So, rather than lose money and go bankrupt or out of business, U.S. producers have turned to foreign suppliers to some degree to satisfy their delivery commitments.

Senator FORD. How much is some degree?

Mr. GRANDEY. That figure, sir, I do not have.

Senator FORD. Can you get it?

Mr. GRANDEY. Well, we can get it, yes, sir.

Senator FORD. I would like to have it if you don't mind.

[The information was not supplied for the record.]

Senator FORD. How will Amendment 10 increase domestic mining production?

Mr. GRANDEY. Amendment 10. The purchase program was designed in such a way that it would put the Department of Energy into the marketplace as an active buyer. And the purchases were restricted to U.S. produced uranium, in other words, uranium that was mined and milled in the United States. It was designed at a level. We thought perhaps over the time that prices would be $20 to $25 a pound. So, the 30 million pound figure that you heard in testimony earlier, or 6 million pounds a year, would get us to a level from 13 million pounds a year to 20 million pounds a year of production, which is about half the size the industry was in 1979.

We recognize that we are not going to be an industry recapturing the full 40 million pounds that we produced in 1979, but we do believe a viable industry is at about a 20 million pound per year level. By selling into this purchase program, we believe that producers, number one, can produce and be competitive about it, and that we would generate about 6 million pounds a year of additional production.

Senator FORD. On that basis, can you see long-term help, long-term viability?

Mr. GRANDEY. The purchase program was designed for a five year period of time, and it was designed intentionally that way for this reason. The problem of this industry has not been demand for uranium. Worldwide in the western world, the utilities demand about 100 million pounds per year. But overhanging the market has been, first, in 1980 about eight years of inventory and currently, as you heard, about four years of inventory.

But a significant fact in 1985 the demand by utilities for the first time exceeded the production capacity, the production and supplies produced by the western world suppliers. And for each year since 1985, requirements by utilities have exceeded supplies. So, the inventory that is overhanging the market is being worked off, as the testimony that has been given earlier.

And we believe that over the five year period of time, the inventory quantities will be worked down to the one to two year level that allows the laws of supply and demand to come back into force, to come back into play and establish prices at which U.S. producers can compete and compete effectively.

Senator FORD. One of the reasons I asked that question, and your answer brings me around to a letter from the Uranium Producers of America to the Commerce Department to help with that department study re section 232. And it reads in part: "The combination of the existing inventories and subsidized foreign production is the principal source of market weakness. In 1980 at the time of the industry's collapse, there existed an eight year forward inventory. All but three years of this has been consumed.

"It is estimated that within five years inventory levels will be reduced to the customary one or two years and normal laws of supply and demand will once again operate to set prices. By then the effects of subsidized foreign production should be diminished as well. It is this five year period then that the industry must somehow survive."

Why is it we need to spend all this money then when you are looking at one or two years that it will stabilize?

Mr. **Grandey**. Mr. Chairman, I don't believe it will stabilize in one to two years. I think it will take the five year period that we indicated in our submittal. And the purchase program that we designed was intended to bridge the period of time, the five years, so that we can get from this point to the point five years hence when supply and demand come back into balance unaffected by the inventory that is overhanging this market.

We have worked now through, if you will, about four to five years of inventory. But it has taken us nine years to do that. We expect that it will be another five years give world production rates and usage to get to a point where supply and demand is in balance. And at that point in time, the industry will be able to compete, and if it can't, sir, it is prepared to die.

Senator **Ford**. You remember your letter well, don't you?

Mr. **Grandey**. I wrote it, yes.

Senator **Ford**. That's what I say.

Is it a continuing policy of government to create an artificial demand—the policy of spending that much money? Are we creating an artificial demand?

Mr. **Grandey**. You are creating here in a rather unique situation demand that can be used by the Department of Energy. Yes, it is production that otherwise wouldn't be there, which is exactly the bridge that I was describing earlier. But they are pounds that would be produced that the Department of Energy can use to save electricity costs. So, it doesn't go just into another stockpile, if you will. It is material that will actually be used in the enrichment process.

Senator **Ford**. Let me ask you this. How long would it take to restart the domestic industry? What lead time do you need to open the mines? Is that figured in the five years, or is that in addition to the five years?

Mr. **Grandey**. If you lost the domestic industry completely, and we had to start over again to either find additional reserves or develop those reserves that had been abandoned, opening up a mine, as you well know, in today's regulatory environment is not an easy thing. Building a mill in today's regulatory environment is not an easy thing. Generally it's a three to five year development period for a mine in the United States. The licensing can take as long as three or four years by itself if there are people in opposition to it. Building a mill takes several years, on to five again, to license and construct.

So, the industry generally assumes that to open up a mine and a mill in today's environment is an 8 to 10 year period of time.

Let me just follow that a little bit. What is going on also here is that as we fail to deal with this issue, mills are being torn down and decommissioned. Mines are being flooded and abandoned. We are losing reserves. We are losing capacity. And we are precisely on the road to reducing the industry's production level from its present state down to a much smaller state.

Senator FORD. One of the problems we have, Mr. Grandey, with this legislation is what we get hit with, and I want to get this out on the table so you will have an opportunity to answer it. And I'm sure you are capable, and you probably know what is coming.

How many miners do you expect will be put back to work by this proposal? Or basically, how long and on what evidence do you base your conclusions of $375,000 per 2,000 miners—per miner, now?

Mr. GRANDEY. It's a twofold issue. Jobs is one of them. As Senator Domenici testified and Senator Wallop as well, back in the 1970s the industry had approximately 22,000 people directly employed, a large number of whom were in the western states. And today we find ourselves at about a 2,000 employee level industrywide.

Obviously, to compete and compete efficiently, we are not going to get back to a level of employment that is in the 20,000 employee level.

Senator FORD. What is the level?

Mr. GRANDEY. We believe that it will be somewhere on the order of 5,000 employees of direct employees in the industry. There is obviously a very large multiplier effect for these communities which are impacted by mining, both on the positive side when you hire somebody, and on the negative side when you lay them off.

But it's also an issue of not just employment, sir. It's an issue of national security, of being able to supply the defense needs of the country when the country calls on us, being able to supply the demands and the needs of the electric utility industry when the electric utility industry calls on us as well to be able to produce.

Senator FORD. Let me ask one more question and get back to Mr. Bayne. You said you are going to send me some information, but it is our recollection that in March 1987, EEI testified that uranium cost is one-third of fuel cost and fuel is about 10 percent of cost of nuclear. So, in terms of cost, we are not talking about very much and cost percentagewise. Do you agree with that statement by EEI?

Mr. BAYNE. If that is what they said, I probably would agree with it. But I would like to go back and check it.

Senator FORD. I want to tell you. Your confidence in them is a whole lot better than mine. [Laughter.]

Mr. BAYNE. I said I would go check it.

Senator FORD. You go check it, will you?

Mr. BAYNE. Yes, sir.

Senator FORD. You go check it. When they can't make a statement—oh, I'm sorry. My assistant took care of me here. I keep digging a hole and she keeps filling it up for me. I'm proud of her.

EEI did okay. So, I'm thinking about the people over here a while ago who couldn't tell you what has come in and where it's coming from. [Laughter.]

We're going to have a set-to.

I have no further questions. There may be some questions from other Senators who did not attend today, and they will probably submit those in writing to all four witnesses. I hope that you will answer those in a timely manner.

I do in a final statement urge both parties to come to a solution so we can move ahead with this legislation. It is needed and it appears that the enrichment industry will not move very fast with only one leg of the stool. And so, we do need a solution so we can put the package together and move on. And I hope that you all will make every effort. And I think you will.

Mr. GRANDEY. Mr. Chairman, we will indeed, and we thank you for the quality of the questions. This is the first time that a lot of these issues have been aired, and it is quite nice to hear the quality.

Senator FORD. I thank staff.

We're adjourned.

[Whereupon, at 4:22 p.m., the hearing was adjourned.]

APPENDIXES

APPENDIX I

Responses to Additional Questions

Department of Energy
Washington, DC 20585

June 14, 1989

The Honorable Wendell H. Ford
Chairman
Subcommittee on Energy Research
and Development
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On April 19, 1989, Deputy Secretary W. Henson Moore appeared before your subcommittee to discuss S. 83, legislation to establish a wholly-owned Government corporation to manage the uranium enrichment enterprise.

Following that hearing, you submitted written questions for our response to supplement the record. Enclosed are the answers to those questions. The answer to question 13 will be provided as soon as it becomes available.

If you have any questions, please have your staff call Rebecca Thompson on 586-4277. She will be happy to assist.

Sincerely,

Robert G. Rabben

Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosures

cc: The Honorable James A. McClure
Ranking Minority Member

POST-HEARING QUESTIONS AND ANSWERS
RELATING TO THE APRIL 19, 1989, HEARING
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

WITNESS: W. HENSON MOORE
DEPUTY SECRETARY OF ENERGY
U.S. DEPARTMENT OF ENERGY

QUESTIONS FROM SENATOR FORD

Board of Directors

Question 1(a): Your legislation (S.847) sets up a corporation that is managed by a Chief Executive Officer responsible to a Board of Directors.

(a) Please describe the strengths and weaknesses of this form of organization as you see them.

Answer: An organizational structure with a Chief Executive Officer and a governing Board of Directors will bring to bear management resources that possess a variety of backgrounds, interests, strengths and compatibilities that can effectively address the complex responsibilities of managing a billion dollar business. The uranium enrichment corporation is basically a commercially oriented business entity that must operate in a competitive market. A governing Board of Directors would provide external experiences that complement the external focus of the enrichment corporation on the competitive market. It also will assist in the eventual transition from a Government to a private corporation. The only apparent weakness of a managing board structure is decision making may be a slower process. It is felt that even if this should occur, the strength inherent in the collective advice of a number of competent managers could more than offset any delays from deliberation.

QUESTIONS FROM SENATOR FORD

Board of Directors

Question 1(b): Indicate why this form of organization is especially appropriate to the uranium enrichment enterprise.

Answer: As previously indicated, the enrichment corporation is a commercial business entity that is attempting to maximize its value in the face of the external pressures of a competitive market. Commercial firms generally utilize a managing Board organizational structure as a preferred approach in achieving success. The merits of receiving an external perspective from board members for a business that has an external, commercial orientation are considerable. For most business decisions, a board will contribute a broad range and variety of experience and inputs. The commercial focus of the enrichment enterprise and the classical benefits of a managing board to commercial type businesses make the application of a Board of Directors especially appropriate.

QUESTIONS FROM SENATOR FORD

Board of Directors

Question 1(c): One traditional function of a Board of Directors is to represent, resolve, and implement policy preferences of a diversity of ownership for an enterprise. Here, however, there would be only one owner, the United States. Why should representatives of private interests be granted more than an advisory role in the management of a Government enterprise?

Answer: The owners of the enrichment corporation are in reality the U.S. taxpayers. As such, interests in the corporation's welfare and the benefactors of its successful operation are not merely restricted to the one institution or entity. In a sense, all U.S. citizens have a vested role in the enrichment corporation. Therefore, it seems appropriate to grant representatives from the American public the right to participate in the management of the enrichment business. It is even more relevant to obtain the best talent available to ensure that timely business decisions are made that help make the enrichment corporation a commercial success. Through the process of having board members selected by the President with the advice and consent of the Senate, it is felt that the management of the enrichment corporation will be most effectively carried out in the best interests of the owners, the American taxpayers.

QUESTIONS FROM SENATOR FORD

Board of Directors

Question 1(d): The corporation will have particular responsibilities affecting national security, nuclear nonproliferation, and the supply of fuel for the nuclear navy. How would the interests of the United States be reflected in policies for the uranium enrichment enterprise that are developed by such a Board?

Answer: Under the Administration's proposal, the Corporation is provided a legislative mandate in Section 1202 (Purposes) of S.847 which requires the Corporation "to continue to meet the paramount objectives of ensuring the Nation's common defense and security while taking into consideration United States policies concerning nonproliferation of atomic weapons and other non-peaceful uses of atomic energy." Therefore, policies developed by a Board of Directors would necessarily be consistent and in full compliance with this legislative mandate.

QUESTIONS FROM SENATOR FORD

Board of Directors

Question 1(e): The uranium enrichment enterprise provides services to the electric utility industry. What guarantees would the U.S. have under your bill that utility customers won't dominate the Board and cause undue benefit to utilities in the operation of the Corporation?

Answer: The Board will be appointed by the President with the advice and consent of the Senate. We fully expect that this process will result in a Board with a balanced representation of interests and views.

QUESTIONS FROM SENATOR FORD

Board of Directors

Question 1(f): **What other federal enterprises have been or presently are managed as you propose? In each instance discuss the rationale for using a Board-CEO approach to management and indicate how the arrangement has worked.**

Answer: The Board of Directors concept is not foreign to Government corporations. Several successful Government organizations embrace this concept in lieu of a single administrator or Advisory Board structure. Federal Prison Industries, Conrail, the Tennessee Valley Authority, Federal National Mortgage Association (Fannie Mae), and Communications Satellite Corporation (COMSAT) are a few of the Government organizations that have successfully employed the Board of Directors concept. While the extent of management oversight practiced may vary, their role is generally confined to strategic and policy direction with day-to-day responsibilities delegated.

The rationale for using this structure in these cases is based primarily on the external commercial focus of the Corporation. Organizations whose transactions are of a commercial nature and external to the Government have demonstrated a more successful management approach using a managing Board. Typically, these groups provide diverse

Answer 1(f) (continued):

backgrounds in commercial areas related to the business of the organization. As a result, the external focus of the firm is complemented by the external experience of the managing Board. As contrasted to a single Administrator, a managing Board brings a broader appreciation for the commercial aspects of the organization, ensuring that more of the relevant issues are addressed in the decision-making process.

QUESTIONS FROM SENATOR FORD

Administrator

Question 2(a): Legislation introduced by Senator Johnston and myself (amendment 6 to S.83) provides for an Administrator within the Department of Energy to function as Chief Executive Officer for the Corporation. The Administrator would receive (and be required to respond to) the views of an Advisory Board representing the private interests to whom the Corporation is important.

Explain the strengths and weaknesses of this form of management as you see them.

Answer: As proposed in amendment 6 to S.83, the Administrator would not be within the Department of Energy but would be appointed by the President and manage the Corporation without being under the supervision of a Board of Directors. A strength of having such an Administrator is that the direct management of the Enrichment Corporation is focused on a single, full time source of authority. This should enable decisions to be made on a timely basis and permit achieving the goals of the Corporation without the need for extensive deliberation. On the other hand, this strength could be a weakness. The benefits of the alternative perspectives and deliberation of a corporate board would be lost. In addition, an organizational structure with an Administrator is incompatible with typical commercial operations in the private sector and, therefore, the application and eventual transition of this enterprise to the private sector would not

Answer 2(a) (continued):	be accomplished as easily as if a separate CEO and managing Board were in place.

QUESTIONS FROM SENATOR FORD

Question 2(b): Why did you reject this option for management of the Corporation in drafting the Administration bill?

Answer: The primary reason for rejecting the intra-DOE Administrator approach is that it would not improve significantly the competitive viability of U.S. uranium enrichment operations. Our bill reflects DOE's belief that we must establish a freestanding commercially oriented entity equipped with business characteristics in order to best ensure its success. Authorizing a managing Board of Directors to select a chief executive officer is more representative of commercial businesses in the private sector and therefore offers more hope that U.S. uranium enrichment operations will be able to compete successfully in the world marketplace.

QUESTIONS FROM SENATOR FORD

Administrator

Question 2(c):	What federal enterprises have been or presently are managed in the manner proposed in Amendment 6? In each instance, discuss the rationale for this choice of management structure and indicate how the arrangement has worked.
Answer:	The Government National Mortgage Association and the Saint Lawrence Seaway Development Corporation are the two Government corporations of which we are aware that have no governing Board of Directors. Both corporations are headed by an Administrator who reports to a Cabinet Officer. The Administrators of the Government National Mortgage Association and the Saint Lawrence Seaway report to the Secretaries for Housing and Urban Development and Department of Transportation, respectively. We are not cognizant of the rationale for this choice of management structure.

The National Academy of Public Administration, which ordinarily supports non-governing boards, stated in an August 1981 report for the Office of Management and Budget that, "In mixed public-private corporations intended for eventual transition to the private sector . . .a governing board may be more desirable or necessary, serving to represent the private owners or parties at interest and to prepare the way for, or assisting, its private operations" (emphasis added). As the Administration wants to provide, insofar as possible,

Answer 2(c) (continued): a corporate structure readily transferable to the private sector, we believe that a governing board authorized to select a CEO is preferable to a central administrator within an agency.

QUESTIONS FROM SENATOR FORD

Question 2(d):	Do you believe that there is any advantage to centralized authority in the case of the uranium enrichment program (given the problems it faces) as compared to a diffusion of authority among interests that might be represented in a Board of Directors?
Answer:	The Administrator approach may offer some benefit in terms of having a centralized source of authority. However, this could also be served by the Chief Executive Officer, as in most commercial, profit-seeking corporations. The advantage of receiving a broader, more diverse view from the Board of Directors is expected to provide stronger and more effective management direction to the Enrichment Corporation, particularly compared to an Administrator that remains inside DOE.

QUESTIONS FROM SENATOR FORD

Administrator

Question 2(e): Do you see the adoption of an Administrator to head the corporation as opposed to a Board-CEO approach as inimical to the Administration's privatization goals? If so, please explain.

Answer: Every difference between the final form of the Government corporation and what would be needed in a private corporation will increase doubts in the minds of potential investors about the corporation's ability to perform successfully in the private sector. Such doubts will lower the value of the Government corporation and, consequently, the return to the taxpayer when it is sold. By creating a Government corporation that is as similar as possible to a private corporation with regard to structure, obligations, and incentives, the Administration expects to be able to establish a record of performance that will attract private interest in the corporation. Particularly if management for the corporation remains essentially inside DOE, we believe we will have made little or no progress toward goal of privatization.

QUESTIONS FROM SENATOR FORD

Privatization

Question 3(a):	Explain why it is important for the success of the domestic uranium enrichment enterprise to grant authority now to the President to sell the Corporation's property and assets at some time in the future, without prior review and enactment of enabling legislation by Congress at the time of the proposed sale.
Answer:	The creation of a Government corporation is an interim step which would promote efficiency and generally improve the health of the business such that the return the Government (taxpayers) will realize at the time of sale or transfer will be greater. It is felt that the ultimate success of the domestic uranium enrichment enterprise will be enhanced by the transfer of ownership to the private sector. Therefore, any hurdles that could potentially delay this transfer have been identified and steps to resolve them as quickly as possible have been proposed. One such step is the granting of authority to sell the Corporation's property and assets to the President.

QUESTIONS FROM SENATOR FORD

Privatization

Question 4(a): Upon privatization, the national security, nuclear non-proliferation, and defense supply interests of the United States will be met by private interests who themselves will be in competition with foreign governments. If these private interests lose out in the competition with foreign governments and decide to leave the business, the United States will be faced with the unpleasant choice of reliance on foreign sources for this essential service or of reconstituting a federal uranium enrichment enterprise.

(a) What is the source of your confidence now that private ownership of uranium enrichment will prove so profitable and so robust as to ensure that we won't face this unpleasant choice?

Answer: Existing enrichment contracts that will be transferred to the Government corporation represent a strong future earnings base that should facilitate a profitable operation. The corporation will also be provided with a management structure and commercial flexibilities that are expected to provide efficiencies that will result in reduced costs. With these characteristics and attributes, the corporation is fully expected to generate a financially healthy, competitive business entity that will also serve as a reliable domestic supply source.

QUESTIONS FROM SENATOR FORD

Privatization

Question 4(b): Should the United States rely on foreign sources for enrichment services for defense programs?

Answer: No, this would not be an acceptable situation.

QUESTIONS FROM SENATOR FORD

Privatization

Question 4(c): Do you believe that any amendments to the regulations or the statutory authority of the Nuclear Regulatory Commission are needed to insure that the interests of the United States are adequately protected in operation of a private uranium enrichment enterprise? Explain.

Answer: We do not believe that changes to NRC's statutory authority are needed. However, since NRC does not currently have a regulatory framework for licensing uranium enrichment facilities, private operation of such facilities would require the promulgation of new regulations. We believe that the proper approach would be under 10CFR, Parts 40 and 70 as opposed to 10CFR, Part 50, and our legislation would provide for such an approach.

QUESTIONS FROM SENATOR FORD

Price-Anderson Act

Question 5(a): Explain how, in the Administration bill (S.847), you intend to provide for indemnification of the Corporation and its contractors for nuclear hazard liability. What subsections of Section 170 of the Atomic Energy Act would apply? What is the rationale for this treatment of the Corporation and its contractors?

Answer: The Administration believes that, as a commercial entity, the Corporation and its contractors should be treated like an NRC licensee rather than a Government agency for purposes of Price-Anderson indemnification. Accordingly, in our proposed legislation, the Nuclear Regulatory Commission would decide the portion of liability coverage that the corporation and its contractors would be required to provide from commercial sources. All of Section 170 of the Atomic Energy Act except for subsections d. and k. would apply to the Corporation and its contractors.

QUESTIONS FROM SENATOR FORD

Price-Anderson Act

Question 5(b): Explain why you rejected the approach taken in Amendment 6, under which a Corporation contractor would be indemnified as any other federal contractor is indemnified.

Answer: The Administration believes that entities of a commercial nature should be expected to share the responsibility for third-party liability indemnification.

QUESTIONS FROM SENATOR FORD

Decontamination and Decommissioning

Question 6(a): What is your estimate of the cost of decontamination and decommissioning of the property and assets of the Corporation transferred under the Administration bill? Under Amendment 6?

Answer: The Department currently estimates that the cost of D&D at the three gaseous diffusion sites is $3 billion. Under the Administration's bill this cost will be allocated between commercial and Government customers based on the cumulative production from each facility that was generated to meet commercial and Government customer needs, respectively. The Corporation will be responsible for collecting and paying for the commercial share of D&D at all three sites. The total commercial share is estimated to be $1.4 billion. The Oak Ridge facilities would not transfer to the Corporation, but the Corporation will be responsible for paying the commercial share of the D&D for those facilities.

Amendment 6 to S.83 utilizes the same cost allocation methodology, based upon the cumulative production to Government and commercial customers. The total commercial share of the D&D cost would be $1.05 billion. Under Amendment 6, the Corporation would only be responsible for the commercial share of the Paducah and Portsmouth facilities but not the Oak Ridge facilities.

QUESTIONS FROM SENATOR FORD

Decontamination and Decommissioning

Question 6(b):	How long will it take to accumulate these amounts at the rate set forth in section 1702(a) of the Administration bill?
Answer:	Under the Administration's bill, the Corporation will be required to make payments into the D&D Fund of $40 million in FY 1990 and $50 million annually thereafter. The bill provides that these monies will be deposited in an interest bearing account. Assuming an interest rate of 8 percent, the commercial share of the D&D costs is projected to have been met by 2005. The bill further provides for a review by the Corporation of the total estimated cost of D&D at least every 2 years. This would then allow for any readjustment reached to meet the commercial share of the total D&D cost in the most responsible manner.

QUESTIONS FROM SENATOR FORD

Safety

Question 7(a): Are the Paducah and Portsmouth enrichment plants under the jurisdiction of the Defense Nuclear Facilities Safety Board established in accordance with Chapter 21 of the Atomic Energy Act? Why or why not?

Answer: We are of the opinion that Paducah and Portsmouth enrichment plants are now under the jurisdiction of the Defense Nuclear Facilities Safety Board because each is a "Department of Energy defense nuclear facility" as defined by new section 318 of the Atomic Energy Act of 1954. Both facilities meet the traditional definition of a production facility and both also produce special nuclear material that is used in naval propulsion reactors for defense purposes. Both facilities also are "under the control or jurisdiction of the Secretary of Energy" as required by section 318. The ultimate interpretation of what comes under the Board's jurisdiction, however, will rest with the Board itself.

QUESTIONS FROM SENATOR FORD

Safety

Question 7(b): Should the Corporation be under the jurisdiction of this Board? Why or why not?

Answer: The Corporation would not be under the jurisdiction of the Board because its production facilities are not "under the control or jurisdiction of the Secretary of Energy." Under the Administration's bill, the Corporation would be subject immediately to outside safety oversight by the Department of Energy (Section 161[illegible]). Once licensed by the Nuclear Regulatory Commission, the Corporation would be under its jurisdiction for safety oversight (Section 1601).

QUESTIONS FROM SENATOR FORD

Safety

Question 7c:	How is this issue resolved in the Administration bill?
Answer:	Under the Administration's bill, as indicated in the previous question, the Corporation would be subject immediately to outside safety oversight by the Department of Energy (section 1610, S. 847). Once licensed by the Nuclear Regulatory Commission, the Corporation would be under its jurisdiction for safety oversight (section 1601, S. 847).

QUESTIONS FROM SENATOR FORD

Safety

Question 7(d):	How would this issue be resolved under Amendment 6, in your opinion?
Answer:	It is our understanding that amendment 6 would make the Corporation responsible for the safety of its facilities without outside oversight until the Nuclear Regulatory Commission licenses the facilities, which would be at least 4 years after the passage of the Act (see section 1601). Amendment 6 would provide that the Department's orders and regulations, including those involving safety, would continue in effect until modified (section 1403(b)). While it also would apply the Occupational Safety and Health Act to the Corporation to the same extent that the Department is subject to that Act (section 113), the Department is exempt from that Act.

QUESTIONS FROM SENATOR FORD

NRC Licensing

Question 8(a): Explain the differences between the approaches taken to licensing of property and assets of the Corporation in the Administration bill and in Amendment 6. Discuss the reasons why you believe the Administration bill to be preferable in this regard.

Answer: The Administration's bill initially exempts the gaseous diffusion plants from licensing. It requires the NRC to develop licensing regulations within 2 years after which the Corporation is to apply for a license within 1 year. The NRC is required to make a licensing decision within 5 years and, if the plants cannot be licensed, the Corporation can continue to operate them. All new enrichment plants must be licensed by the NRC; DOE retains nuclear safety oversight until the plants are licensed.

Amendment 6 also initially exempts the gaseous diffusion plants from licensing. It requires NRC to issue regulations for licensing within 4 years and the Corporation is to apply for a license as soon as possible. During its licensing deliberations, the NRC does not need to consider the need nor alternatives to such facilities. Amendment 6 does not specifically mention that new facilities will be licensed but the exemption clearly applies only to the existing diffusion plants.

Answer 8(a) (continued): The Department prefers the Administration's licensing provision because it provides a more responsible mechanism to address the licensing issue for uranium enrichment facilities. Also, since we believe that licensing represents the largest single issue that must be resolved in order to transfer the enterprise to the private sector, it should be pursued as quickly as possible.

QUESTIONS FROM SENATOR FORD

NRC Licensing

Question 8(b): Explain why you believe that preparation of an Environmental Impact Statement should be mandated in the licensing of existing facilities of the uranium enrichment enterprise and what issues (and what alternatives) this EIS would address.

Answer: Because uranium enrichment facilities have not previously been licensed, no precedent exists regarding licensing decision procedures for these facilities. This lack of precedent raises a question as to whether NRC's licensing decision would represent a major federal action significantly affecting the environment that requires an environmental impact statement. By addressing this question in legislation, Congress could resolve any ambiguity by prescribing whether an environmental impact statement should be prepared.

QUESTIONS FROM SENATOR FORD

NRC Licensing

Question 8(c): Would an EIS be required under the provisions of Amendment 6? Why or why not?

Answer: Section 113 of Amendment 6 states that the Corporation shall be subject to Federal environmental laws to the same extent as DOE for its first 4 years. Since DOE is required to conduct an EIS for its major actions significantly affecting the environment, the Corporation would also be required to do an EIS for such a major Federal action. After 4 years, the Corporation becomes subject to Federal environmental laws to the same extent as a private Corporation unless the President determines that additional time is needed to achieve the purposes of the bill. Therefore, the need to conduct an EIS beyond the first 4 years is unknown.

QUESTIONS FROM SENATOR FORD

Pricing

Question 9(a):	**What is the rationale for the limitation on pricing for Government enrichment services contained in section 1506 of the Administration bill?**
Answer:	The Administration's bill specifies that the price for low assay enrichment services to Government customers be established to recover the cost of production, but in no event would it exceed the average commercial price for low assay enrichment services. This limitation was included to avoid the possibility that the Corporation would allocate a disproportional amount of the costs of production to Government customers. The concern is that commercial prices would be established on a basis to maximize profits (and not based on a defined cost formula) while the price to Government customers would be based on a cost based formula. Within this environment, the Corporation could potentially allocate more costs to captive Government customers than is their equitable share in order to make more commercial sales and higher profits. Also, even though the price to commercial customers would include depreciation, the price to Government customers would not include a depreciation component. The rationale for this approach is that the Government has already paid for these facilities. Therefore, requiring Government customers to pay

Answer 9(a) (continued):

depreciation for enrichment services that are provided from existing facilities would result in the Government having to pay twice for the same facilities. However, it should be noted that prices to Government customers would include depreciation when enrichment services are provided from any new facilities because the funds necessary to build these facilities would be generated from business revenues on borrowings from the private sector and not from Government appropriated funds.

QUESTIONS FROM SENATOR FORD

Pricing

Question 9(b):	Would services be offered to the Government below cost under the Administration bill? If so, why is this justified?
Answer:	Uranium enrichment services would not be provided below costs to the Government under the Administration's bill.

QUESTIONS FROM SENATOR FORD

Pricing

Question 9(c): Compare the provisions of section 1506 of the Administration bill and section 1508 of amendment 6 relating to pricing of enrichment services. Indicate what the advantages of the Administration's bill are in your opinion.

Answer: There are several differences in the pricing provisions in the Administration's bill and in Amendment 6. The Administration's bill provides that prices to commercial customers will be set to recover costs and make a profit. The pricing provision in Amendment 6 is similar except for a qualification that prices must be permitted by prevailing business conditions and that profits should be generated consistent with the objective of maintaining the enterprise on a continuing basis. The pricing provision in the Administration's bill is preferable because it's purpose is clear and unambiguous. The provision in Amendment 6 can be interpreted as providing conflicting guidance that will result in the Corporation having to decide whether maximizing sales or maximizing profits is the primary objective.

The two bills also treat Government prices differently. Both bills require that Government prices be based on cost recovery, but costs are defined differently. Amendment 6 provides that the Government price recover costs without

Answer 9(c)
(continued):

regard to prevailing business conditions and without generation of a profit. The Administration's bill provides that the Government price recover costs but in no event exceed the average commercial price. The Administration's version is preferred because it avoids the possibility whereby the Corporation would establish Government prices based upon the full costs of production while at the same time setting prices to commercial customers at levels that are lower than cost, thereby creating the situation where the Government customer subsidizes commercial sales.

Finally, the pricing provision in the Administration's bill treats the cost of D&D and remedial action differently than does Amendment 6. The Administration's bill requires that the commercial share of future D&D costs associated with all three enrichment plant facilities be included in the commercial price but not in the Government's price. The Government would pay the Corporation for its share of these costs when the work is actually performed. Amendment 6, on the other hand, does not include the commercial share of D&D cost at the retired Oak Ridge enrichment plant as a component of the commercial price. Also, Amendment 6 provides for Government pricing that collects monies prior to the time that D&D activities are conducted. The Administration's bill

Answer 9(c) (continued): is felt to be more equitable with respect to pricing for D&D and more appropriate in the sense that the Government would not have to appropriate funds until they were needed.

QUESTIONS FROM SENATOR FORD

Pricing

Question 9(d): Why does the price of enrichment services in the Administration's bill exclude depreciation cost? Is that intentional?

Answer: Some cost elements are included in Section 1506 a. in order to contrast them with Section 1506 b. This was done to clarify the definition of costs to be included in the Government price. Prices charged to Government customers exclude depreciation costs related to existing facilities that are transferred to the Corporation. Since these facilities were originally built and paid for with Government funds, to charge depreciation to Government customers would have the Government pay twice for the same facilities.

QUESTIONS FROM SENATOR FORD

Federal Financing Bank

Question 10(a): Why do you believe that the Corporation should not issue or sell any bonds to the Federal Financing Bank?

Answer: The Corporation is designed to operate as closely as possible to the way a private sector business would operate. By requiring the Corporation to borrow only from the private sector, the Corporation would be required to make investments that meet normal business criteria. We believe that this approach will generate a commercial orientation that can facilitate the transfer of the Corporation and increase the return to the taxpayer from the sale of the Corporation.

QUESTIONS FROM SENATOR FORD

Federal Financing Bank

Question 10(b):	What will be the cost to the Corporation of this restriction?
Answer:	It is expected that interest rates associated with private sector borrowing will be greater than the rates charged by the Federal Financing Bank. It is difficult to estimate the actual dollar impact without evaluating the risks associated with a particular need to borrow; however, interest rates charged by the private sector to a Federal entity are about .3 percent higher than those from the Federal Financing Bank.

QUESTIONS FROM SENATOR FORD

Pay Cap

Question 11(a): What other Government corporations or other comparable federal enterprises have officers or Directors whose pay is set without regard to usual limitations on pay for federal employees (full or part time)?

Answer: We are only aware of one Government organization that has been exempt from the Federal pay limitations. It is the Uniform Services University.

QUESTIONS FROM SENATOR FORD

Pay Cap

Question 11(b): In each instance, indicate the rationale for the exemption from federal pay limitations and provide examples of pay currently in effect for these positions.

Answer: The concern regarding Federal pay limitation was the identified need to attract talent that the corporation may not otherwise be able to obtain. We do not have information on the rationale offered for these organizations.

QUESTIONS FROM SENATOR FORD

Pay Cap

Question 11(c):	What comparable federal enterprises operate within the federal pay scale?
Answer:	To our knowledge, all other Government-owned corporations operate within the Federal pay scale. However, we understand that a number of these organizations offer bonuses from time to time as an added compensation benefit for employees that make significant contributions to the success of their organizations.

QUESTIONS FROM SENATOR FORD

Pay Cap

Question 11(d): In each instance, indicate whether, in your opinion, this has caused problems for the enterprise in question.

Answer: The pay cap has created problems in some Government corporations. For example, the pay problems with TVA have been well publicized. On the other hand, the absence of a pay cap was a contentious issue with the Synthetic Fuels Corporation.

QUESTIONS FROM SENATOR FORD

Cancellations as for April 1

Question 12(a): On April 1, 1989, utility customers notified the Department of Energy of their intentions to take deliveries for 1999. How many utilities notified DOE of termination of deliveries for 1999? How many reactors are covered by these terminations? How many SWU does this represent? What percentage of world market share do these SWU correspond to? What percentage of the domestic market do these SWU correspond to?

Answer: On April 1, 1989, DOE received notices of full or partial terminations from 18 Utility Services Contract customers for deliveries in FY 1999. Forty-four reactors were terminated in full and seven in part. The terminations received by DOE on April 1, 1989, represent an estimated 2.7 million SWU in FY 1999. Based upon the projected demand in FY 1999, these terminations would represent nearly 10 percent of the total world market and almost 30 percent of the total domestic market.

QUESTIONS FROM SENATOR FORD

Cancellations as for April 1

Question 12(b):	How many SWU were terminated by utilities on April 1, 1988, for 1996-1998? Cumulatively, how many SWU were terminated by utilities for 1996-1999? What percent of market share, both worldwide and domestic, does that represent? How much are the cumulative terminations worth? Please compare the results from this year with the terminations from last year.
Answer:	Approximately 4.9 million SWU were terminated in all or part for the year 1996 through 1998 by Utility Services Contract customers on April 1, 1988. Cumulatively, approximately 7.6 million SWU have been terminated for 1996 through 1999 from DOE's domestic and foreign customers. (Of this amount, approximately 7.5 million are from DOE's domestic enrichment customers.) Based upon the average annual projected enrichment demand for the 1996 through 1999 timeframe, these terminations represent about 7 percent of the total world market and slightly more than 20 percent of the total U.S. market. At the FY 1990 DOE price of $122 per SWU, the cumulative terminations for 1996-1999 represent approximately $925 million.

Answer 12(b) (continued): The results of the April 1, 1989, notice reflect an increase of approximately 9 percent in the termination amounts from all DOE customers and an approximate 15 percent increase in termination amounts among domestic customers vis-a-vis the results of April 1, 1988.

QUESTIONS FROM SENATOR FORD

Question 12(c): What percent of the domestic market does the United States hold in 1990? Please compare that to the domestic market share for 1975, 1985, 1995, and 1999.

Answer: The Department's share of the domestic enrichment market for the years 1975, 1985, 1990, 1995, and 1999 is shown in the following table.

Year	Domestic Market Share
1975	100
1985	76
1990	87
1995	78
1999	41

The market percentage indicated in 1985 is slightly misleading because significant amounts of excess inventories of DOE enriched uranium were used to meet domestic utilities' needs in that year. In general, the Department's share of the domestic market in the mid- to late-1980's was 85 to 90 percent.

The 41 percent share listed for 1999 reflects decisions made by utilities to avoid a commitment at this time to a single enrichment supplier 10 years into the future. Rather, they prefer to keep to purchase options open for 1999, and DOE

Answer 12(c) (continued): will have the opportunity to compete for these sales in the future.

QUESTIONS FROM SENATOR FORD

AVLIS

Question 14(a):	In testimony before the Subcommittee on Energy Research and Development on April 19, 1989, Deputy Secretary Moore stated that the deployment of AVLIS technology would not add to capacity. He also stated that AVLIS would only replace a limited portion of the existing gaseous diffusion plants if the marginal cost of the diffusion plants was too high. If AVLIS deployment would not add new capacity, and may or may not replace existing capacity -- why are we continuing to develop this technology? What are the specific advantages to the continued development of AVLIS technology?
Answer:	The statement is presumably a transcription error. The correct statement is ..."AVLIS is a new technology, not only to add capacity, but also to eventually perhaps replace capacity"... The advantage of completing the development of AVLIS through the demonstration phase is that it will permit a decision to be made regarding its possible use for either or both of these purposes.

QUESTIONS FROM SENATOR FORD

AVLIS

Question 14(b): Deputy Secretary Moore also stated that there may be "a number of attractive market applications to provide additional incentives to invest in it." Can you please be more specific as to what these applications and incentives are?

Answer: A number of attractive market applications provide additional incentives to invest in AVLIS. These include:

1. The ability to address new market possibilities such as the enrichment of reprocessed uranium.
2. The ability to attract new sales that cannot be obtained with the competitive capability of DOE's existing enrichment capacity.
3. Replacement of a limited portion of existing capacity that has high marginal costs.
4. Full replacement of existing gaseous diffusion plants if their cost growth makes them noncompetitive.

QUESTIONS FROM SENATOR FORD

AVLIS

Question 14(c): In the past, the Department of Energy has prided itself on its lead in the development of the AVLIS technology. Does DOE still maintain this lead in the development of the technology? Are the Japanese devoting considerable resources to the development of a laser enrichment process? How far behind us are they and how fast are they advancing?

Answer: We believe that the United States has a 5 year lead in the development of the AVLIS process compared to the program in Japan. Two years ago the Japanese announced the formation of an organization supported by their utilities, government, and industry to pursue accelerated development of the technology. They have announced that they will expend approximately $350 million from 1987 through 1991 and it was their intent to demonstrate the process at a significant scale at that time. This demonstration is expected to be similar to that conducted by the Lawrence Livermore National Laboratory in 1985.

QUESTIONS FROM SENATOR FORD

AVLIS

Question 14(d): Has a decision been made to proceed with a demonstration of the AVLIS technology? If not, when will that decision be made? What is the scope of DOE's proposed demonstration program? In your view, what do you gain by performing a demonstration? When will the demonstration be completed? Has a decision been made to deploy the AVLIS technology? If not, when do you anticipate that decision will be made?

Answer: Based on a request by the Department to evaluate the status of the AVLIS technology and develop a program plan that would lead to an early demonstration of the process at full scale, the program participants recommended a course of action that would lead to such a demonstration by the end of 1991. The Department has approved this plan as the basis for the continued development of the AVLIS process. The objective of the AVLIS technology demonstration program is to validate technical and economic value at full production scale. No decision has been made to deploy the AVLIS technology. If the demonstration program successfully indicates the technical and economic value of the AVLIS technology and market conditions warrant the commercial application of AVLIS, then a deployment decision can be made.

QUESTIONS FROM SENATOR FORD

AVLIS

Question 14(e): DOE has talked about an "industrial partner" for the AVLIS program for sometime. What role will that industrial partner play in the development of the technology? What specifically would be the responsibilities of the Department, of Lawrence Livermore National Laboratory, and the responsibilities of the industrial partner be, assuming that DOE chooses to pursue that option? Has an industrial participant been selected yet? If not, when do you expect that to happen?

Answer: An industrial partner's role in the AVLIS program would be to assemble an interdisciplinary team having skills in plant design, the manufacture and production of special components, sales and marketing, and financial/venture analysis; to assume responsibility for the management of the demonstrations to be conducted at the Lawrence Livermore National Laboratory and Oak Ridge; and to conduct a comprehensive assessment of the technical, engineering, economic, commercial, and economic merits of the process. The Department would be responsible for the overall management of the program, with LLNL responsible for the development and operation of the separator and laser systems to be used in the demonstrations. The Department is currently evaluating which organization could best serve in the role as industrial integrator.

QUESTIONS FROM SENATOR FORD

AVLIS

Question 14(f): Where does AVLIS stand in terms of cost and reliability projections compared to what is necessary for commercial viability given future market projections?

Answer: The projected cost for the production of enriched uranium using the AVLIS process, depending on the size of the plant and the fuel cycle interface, is estimated to be between $25 and $50 per separative work unit. This estimate does not include research, development, demonstration, and engineering testing costs. To date, the reliability of the laser system has been demonstrated to greater than 50 percent of that required for a plant. Only limited reliability data is available on the operation of the separator system, however, the lifetimes of many components have been demonstrated on a basis that would be required for a production plant.

QUESTIONS FROM SENATOR FORD

AVLIS

Question 14(g): Deputy Secretary Moore stated that the Department would "pursue the direction and development of AVLIS as a DOE project even if this becomes a corporation." Does this mean that DOE will be making the decision to proceed on AVLIS without regard to the production needs of the corporation? How might the needs of the corporation be integrated into the development of the AVLIS technology? If the corporation decides not to pursue deployment of the AVLIS technology because it represents a bad investment decision based on business and financial criteria, will DOE pursue deployment of the AVLIS technology on its own?

Answer: I believe this statement is subject to misinterpretation. The intent was to highlight that the Department currently plans to pursue the development of AVLIS through full scale demonstration. The potential value of this technology in making the U.S. uranium enrichment enterprise competitive in the future is substantial and therefore its continued development is warranted. The Department would have no responsibility for commercial uranium enrichment services after a Government corporation is established.

Department of Energy
Washington, DC 20585

June 13, 1989

The Honorable Wendell H. Ford
Chairman
Subcommittee on Energy Research
  and Development
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On May 11, 1989, Dr. Helmut A. Merklein, Administrator, Energy Information Administration appeared before your subcommittee to discuss S. 83, legislation to aid the domestic uranium mining and milling industry.

Following that hearing, you submitted written questions for yourself and on behalf of Senator Pete V. Domenici for our response to supplement the record. Enclosed are the answers to those questions.

If you have any questions, please have your staff call Michael Gilmore on 586-4277. He will be happy to assist.

Sincerely,

Rebecca A Thompson
for Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosures

cc: The Honorable James A. McClure
Ranking Minority Member

Department of Energy
Washington, DC 20585

June 13, 1989

The Honorable Pete V. Domenici
United States Senate
Washington, D.C. 20510

Dear Senator Domenici:

On May 11, 1989, Dr. Helmut A. Merklein, Administrator, Energy Information Administration appeared before the Subcommittee on Energy Research and Development of the Committee on Energy and Natural Resources to discuss S. 83, legislation to aid the domestic uranium mining and milling industry.

Following that hearing, you submitted a written question through Chairman Ford for our response to supplement the record. Enclosed is the answer to that question, which also has been sent to the subcommittee staff.

If you have any questions, please have your staff call Michael Gilmore on 586-4277. He will be happy to assist.

Sincerely,

Rebecca A Thompson
for Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosure

QUESTIONS FROM SENATOR FORD

Question 1:	In your opinion, what percentage of the uranium sales take place in the spot market?
Answer:	The data collected in our Uranium Industry Annual Survey show that, in 1987, spot sales to U.S. companies represented about 31 percent of total sales (by volume), and in 1988 preliminary data show that about 22 percent of the sales (by volume) to U.S. companies were in the spot market. The Energy Information Administration does not collect spot sales statistics for the world market. Price and uranium sales data are only collected from foreign companies when they are engaged in a contract with a U.S. company or are doing business in the U.S. The above statistics represent a reasonable approximation of the proportion of spot sales in the world market.

QUESTIONS FROM SENATOR FORD

Question 1(a): Are deliveries under long-term contracts being made at spot market prices? If so, which countries are making those deliveries?

Answer: As background, a definition of long term contracts is appropriate. A long term contract is defined as a purchase contract whereby at least one delivery of material will occur on a date more than 1 calendar year after the calendar year the contract was signed. Deliveries can also be made within the year of signing under a long-term contract as long as future deliveries are involved. For example, if a contract were signed in 1989 for delivery of material in each year starting in 1989 through 1995, this would be classified as a long term contract. However, if a contract was signed in 1989 for delivery of material in 1989 and 1990 only, this would be called a spot purchase. If a delivery of material under a long term contract occurs in the same year that the contract was signed, the price of the material in that year will usually be at the current spot market price. The price will be escalated at some rate for the remaining years of the contract.

The data indicate that, on the average, deliveries under long term contracts are being made at a price significantly above the spot market price.

In 1987 approximately 7 million of the 19.4 million pounds delivered under long-term contracts were priced at approximately $16.75 per pound, the average spot market price in 1987. Of this amount, 4 million pounds were of Canadian origin, and the remaining 3 million pounds were of U.S. origin. In 1988, approximately 10 million of 23.2 million pounds were delivered under long term contracts priced at the spot market level. Six million pounds were of Canadian origin and the remaining 4 million pounds were from the United States. All other uranium imports (approximately 9 to 10 million pounds) in 1987 and 1988 were priced on a basis higher than spot market price values.

QUESTIONS FROM SENATOR FORD

Question 1(b): Are you aware of any countries with floor prices for uranium that may be required by the export policy of that country? If so which countries? Are spot market prices now below these floor prices? Are any of these countries making deliveries at spot market prices? If so how can this be?

Answer: In the 1970's Canadian uranium export policy required that uranium producers receive a price that covered their cost of production plus profits. In the early 1980's the Canadian Government modified its export policy to approve market-priced contracts with floor prices low enough to enable Canadian producers to capture sales as long as the particular producer could show his investment was adequately protected. To achieve the above requirement, each export contract is reviewed thereby eliminating the need for mandatory proscriptions. Given this flexibility, it is not clear whether all contracts do in fact compute sale prices based on full cost recovery (sunk capital costs and current operating costs) or on the basis of forward marginal costs (current operating costs and current or future capital outlays). Note should also be taken of the fact that Canada has uranium resources that can be worked at or below prevailing depressed uranium prices.

Nonetheless, Canadian producers in 1988, secured an average of $20.41 per pound of uranium with respect to their export contracts during the year to the United States.

Australia, which has no nuclear power program, seeks to assure its producers of minimum prices and to ensure its uranium does not contribute to the proliferation of nuclear weapons. Australia controls production of uranium by limiting the number of producing mines to three.

The Australian floor price was initially set at $US30 as of January 1, 1980. At that time the Nuexco Exchange Value was $40. As the market price declined below the Australian floor price in September 1980, Australian producers were prevented from entering new export contracts, resulting in a leveling off of production. The Australian Government has since made several adjustments to export policy in attempting to stimulate sales to the United States. The first revision allowed escrowed credits of payments in excess of the spot market price toward future invoices if the spot price were to exceed the floor price at the time of a subsequent sale. The policy was later revised to permit producers to curtail deliveries from Australian production and purchase for delivery from the spot market, or to permit customers to buy on the spot market when the spot market falls below Australia's floor price. In 1986 the Australian government re-established the floor prices to average $31 for the duration of the contract for long-term contracts and $28 for short-duration contracts. In spite of its floor price policy, Australian producers can make deliveries of non-Australian uranium purchased on the spot market at the spot market prices.

The Nuexco Exchange Value (i.e., spot price) on April 30, 1989, was $10.10 per pound of U308, well below the stated Australian floor price.

Australian uranium is subject to the floor price only for export from Australia. After the first sale it is then free of the floor price. Thus, an Australian producer could deliver uranium to Utility A under the contract price at $30 per pound. He could then borrow back the uranium, paying Utility A the Nuexco loan rate of 3.5 percent on the $30 per pound value, and sell the uranium to Utility B below the floor price.

QUESTIONS FROM SENATOR FORD

Question 2: Spot market prices are currently at an all-time low of $10/pound. Is any U.S. production coming on-line at these prices? If not, what price must be sustained to bring on-line new production in the United States?

Answer: For new production to come on-line, commitments for long-term purchases are required. Based on economics alone, no U.S. production would come on-line at $10 per pound. Long-term prices between $20 and $30 per pound could bring substantial amounts of new production on-line, principally, currently shut-down properties and several in the planning stages. Prices in the $30 to $40 per pound range would bring additional shut-down and planned properties on-line.

QUESTIONS FROM SENATOR FORD

Question 2(a): Can the Canadian mines bring production on at this $10/pound level? If not, please explain why the Canadians are scheduled to bring additional production on-line at Key Lake and other sites in Saskatchewan in the 1990's. Doesn't this indicate that Canadian production is subsidized by the government?

Answer: Although there is one operating property in Canada that can produce at a cost near a spot price of $10 per pound, information available from consulting organizations, published reports and press releases from Canadian companies and government officials, and meetings with Canadian government officials indicate that Canadians cannot bring new production on at $10 per pound. In fact, Cameco, the major producer in Canada closed down its 7 million pound per year Rabbit Lake facility on March 28, 1989 for at least six months to modify its mill. There is some possibility the downtime could be extended because of current market conditions.

No additional production is currently scheduled to come on-line at Key Lake and other sites in Saskatchewan. The large, rich deposit at Cigar Lake is undergoing test mining and has no firm commitments or schedule for production. The only other potential new production in

Saskatchewan is the Midwest Project, which is also undergoing test mining, and currently has no commitments or schedule for production.

Annual production capability in Canada is expected to remain constant until the mid-1990's, and higher prices would be required to sustain current production levels at some of the existing projects.

Cameco, the corporation formed by the merger of Eldorado Nuclear, a Crown corporation, and Saskatchewan Mining and Development corporation, a Provincial corporation, is phasing into a private entity and announced in March 1989 that they would reduce their work force in the face of high worldwide inventories and declining spot prices. Indications are that Canadian producers are subject to the same market conditions as other producers in the world, and are not receiving subsidies to enhance their production.

QUESTIONS FROM SENATOR FORD

Question 2(b):	What are EIA projections of spot market and long-term prices?

Answer: Projections of spot and long-term contract prices are published each year in the Domestic Uranium Mining and Milling Industry: Viability Assessment report (Table E1). The report published in December 1988 contained projections of spot and long-term contract prices as shown below:

PRICES (1987 \$/LB. U_3O_8)

Year	Spot	Contract
1990	17.40	18.50
1995	20.50	21.50
2000	26.30	27.00

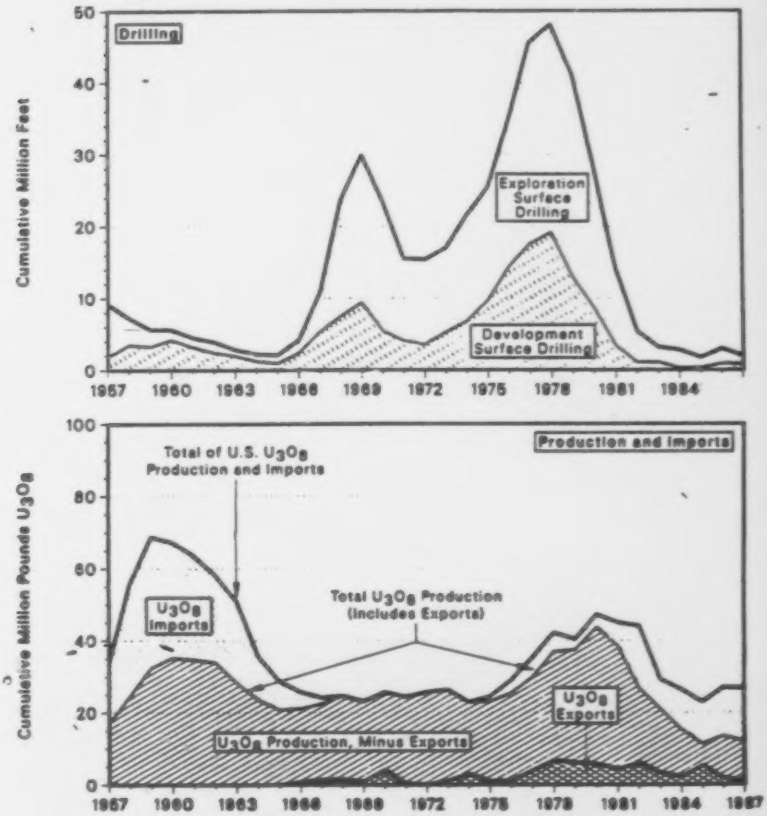
Prices are not projected to reach \$20 per pound until 1995. These price projections were based on conditions that existed in 1988 and estimates of future world-wide supply and demand conditions that were known at that time. It is possible that uranium supplies from China and the USSR will become more available at low prices. Under these assumptions the price forecasts would have to be revised downward.

QUESTIONS FROM SENATOR FORD

Question 3(a):	Are EIA data consistent with the statement that the U.S. uranium industry has undergone cycles of boom and bust since its inception?
Answer:	Yes. As shown in Figure 1, the domestic uranium industry has experienced two boom-to-bust cycles in its 40-year history. The first boom period began in the early 1950s when the Atomic Energy Commission (AEC) established a program of price and purchase guarantees to stimulate uranium production for defense purposes. This program was so successful that it resulted in over supply, prompting the AEC to reduce purchases during the early and mid-1960s. The purchase program was terminated in 1970 when the AEC uranium stockpiles were deemed sufficient to satisfy defense needs well into the future. Reductions in the AEC purchase program brought a period of decline in uranium prices and production because the needs of the nascent commercial nuclear power industry were insufficient to sustain the production capability spawned by the purchase program. Subsequently, this first bust period was followed by renewed prosperity for the

industry in the mid-1970s as an increase in commercial reactor orders prompted sharp increases in uranium demand. However, this second boom proved short-lived as optimistic projections of nuclear electricity demand failed to materialize and reactor orders declined. A second period of decline ensued, and continues today.

Figure 1. U.S. Uranium Exploration and Development Drilling and Uranium Production, Imports, and Exports, 1957-1987



QUESTIONS FROM SENATOR FORD

Question 3(b): EIA data indicate that production in the domestic uranium industry will fall off modestly before doubling by the year 2000. What factors are likely to cause this doubling of production from 7.6 million pounds of U_3O_8 in 1992 to 16.1 millions pounds in 2000? Is the industry moving into an economic equilibrium, i.e., a balance of supply and demand, in the foreseeable future?

Answer: The Domestic Uranium Mining and Milling Industry 1987: Viability Assessment report included projections of domestic uranium production based on market conditions that existed during early 1988.

Based on these 1988 assumptions, uranium requirements, production capabilities of existing and planned uranium production centers, and utilization of existing inventories (both natural and enriched uranium) were projected. By the end of the century most of the world's low-cost uranium resources would be exhausted, and inventory levels would be reduced. Under these conditions annual uranium production in the U.S. will reach about 16 million pounds U_3O_8.

However, current data show that the assumptions used for the 1987 report should be somewhat modified. The market price which was assumed to reach about $16 per pound in 1989 is currently much lower (about $10 per pound). An impact of new entrants into the uranium market, namely the Soviet and Chinese uranium producers, and changes of inventory practices by utilities worldwide could postpone an achievement of balance of uranium supply and demand in the forseeable future.

An updated detailed analysis of the worldwide uranium market is currently being prepared for the Secretary's 1988 uranium industry viability assessment.

QUESTIONS FROM SENATOR FORD

Question 3(c):	The Uranium Producers of America in a letter to the Department of Commerce state: "It is estimated that within five years inventory levels will be reduced to the customary one to two years and normal laws of supply and demand will once again operate to set prices." Please comment on that statement, especially with respect to the levels of domestic inventory and the balancing of supply and demand within five years.
Answer:	The Domestic Uranium Mining and Milling Industry 1987: Viability Assessment report included projections of domestic commercial inventories held by utilities and suppliers of natural and enriched uranium based on market conditions that existed during early 1988. Based on these 1988 assumptions, this report projected inventories to decline to about 106 million lbs. U_3O_8 by the year 2000; this quantity represents three years of annual utility requirements of 35 million lbs. U_3O_8. Therefore, our analysis which projected inventory levels through the year 2000 did not show a balance of supply and demand to be achieved during that time. In addition, the current low uranium prices resulting from the abundance of uranium supplies may cause utilities throughout the world to acquire uranium in excess of the customary

purchases. This could lead to higher inventory levels than were expected last year.

QUESTIONS FROM SENATOR FORD

Question 4: How many Canadian uranium companies are government-owned? What percentage of the total number of companies does this represent?

Answer: The largest Canadian uranium company, Cameco, was formed on July 1, 1988, by a merger of Eldorado Nuclear Limited (ENL), a Crown company, and Saskatchewan Mining & Development Corporation (SMDC), a company owned by the provincial government of Saskatchewan. The new company is jointly owned by the federal government (38.5 percent) and the provincial government (61.5 percent). Cameco is subject to federal and provincial income taxes at the same rates as any privately owned company and does not enjoy any special privileges as far as its long-term debt is concerned. There is an intent by both governments to privatize Cameco through a series of share offerings in the next seven years.

There are only two other Canadian uranium companies, namely Denison Mines Limited and Rio Algom Limited. Note that a majority shareholder of Rio Algom is RTZ Corporation, a United Kingdom company.

QUESTIONS FROM SENATOR FORD

Question 4(a):	What percentage of production do these government-owned companies represent?
Answer:	The 1988 Canadian production was 32.4 million pounds U_3O_8. Cameco, the government-owned company, produced 15.4 million pounds U_3O_8 in 1988, representing about 48 percent of total Canadian production.

QUESTIONS FROM SENATOR FORD

Question 4(b):	Does this indicate significant government participation in the Canadian markets?
Answer:	Indeed, 48 percent is significant participation. Although Cameco is currently owned by the Governments of Canada and Saskatchewan, it operates like a private corporation including the payment of federal and provincial income taxes. The intent is to privatize the corporation in seven years through share offerings.

QUESTIONS FROM SENATOR FORD

Question 5: Please comment on the quality of the Canadian uranium ore, particularly that produced in Saskatchewan, compared with the grade of ore found in the United States?

Answer: Almost two-thirds (63.7 percent) of Canadian deposits are in Saskatchewan. Canadian deposits occur in ore bodies or concentrations that generally are larger or more extensive than typical U.S. uranium deposits.

Uranium Deposit Characteristics

	Average Grade (%U308)	Size Range (million pounds U308)
United States		
New Mexico	0.31	0.75-45.0
Wyoming	0.13	0.15-35.0
Texas	0.14	0.45-8.0
Other	0.26	0.40-25.0
Total	0.23	0.15-45.0
Canada		
Ontario	0.09	30-160
Saskatchewan	5.47	26-250
Other	0.28	10-28
Total	3.57	10-250

Although Ontario's deposits have an average grade of only 0.09 percent U_3O_8, Saskatchewan's deposits average 5.47 percent U_3O_8. In contrast, U.S. deposits range in average grade from 0.13 to 0.31 percent U_3O_8.

QUESTIONS FROM SENATOR FORD

Question 5(a)	Please provide the Committee with information regarding the production costs of the ore in Canada compared with the ore in the United States.
Answer:	In 1987 uranium reserves in Ontario and Saskatchewan are estimated to be 385 million pounds U_3O_8, at a production cost of $30 per pound U_3O_8 or less, while U.S. reserves in New Mexico, Wyoming, Texas, and other states west of the Mississippi River are estimated to be 304 million pounds U_3O_8 at the same cost. The following table presents estimated U.S. and Canadian uranium production costs for specific states and Canadian provinces associated with current production data.

U.S. and Canadian Uranium Production Costs
(Mid-1988 U.S. Dollars per Pound U_3O_8)

United States	
State	Production Cost
Wyoming	22
Texas	18
Others	19
Average	19

Canada	
Province	Production Cost
Ontario	26
Saskatachewan	12
Average	18

QUESTIONS FROM SENATOR FORD

Question 5(b):	Are the U.S. uranium producers at a competitive disadvantage to the Canadians?
Answer:	In 1988, the production costs of all Canadian uranium deposits averaged $18 per pound U_3O_8, and those of U.S. deposits at that time averaged $19. However, grades in the large ore bodies of Saskatchewan are substantially higher than the ore grades in the U.S.

QUESTIONS FROM SENATOR FORD

Question 6:	According to data published by Nuexco in March, 1989, three uranium producers will produce 65 percent of western world uranium during 1989. The top five producers will produce 82 percent of the western world production. Does EIA data verify these statements?
Answer:	According to EIA research for the year 1988, the three top producers accounted for about 42 percent of the western world production and the five top producers accounted for approximately 57 percent of western world production.

QUESTIONS FROM SENATOR FORD

Question 6(a):	Is this concentration of market power, a cartel American ratepayers should be concerned about?
Answer:	The table below provides 1988 production of the western world's top ten producers and their respective shares of total production. The top ten producers accounted for 73 percent of total production.

1988 CONCENTRATION OF URANIUM MARKET

Company	Production (million lbs U_3O_8)	Share (percent)
Cameco (Canada)	15.4	15.8
Cogema (France)	14.2	14.6
RTZ (U.K.)	11.2	11.5
NUFCOR (S.A.)	9.6	9.9
Denison (Canada)	5.0	5.1
Uranerz (W.G.)	4.4	4.5
ERA (Australia)	4.4	4.5
Chevron (USA)	2.7	2.8
IMC (USA)	2.2	2.3
Energy Fuels (USA)	1.8	1.9
Top 10	70.9	72.9
Others	26.3	27.1
Total Western World	97.2	100.0

The major uranium producers participate jointly in several large uranium projects:

- RTZ Corporation PLC holds 51 percent interest in the Canadian company Rio Algom Ltd., (1988 production of 6.1 million lbs U_3O_8 in Canada and 0.6 million lbs U_3O_8 in the U.S.A.)
- Cameco (67 percent) and Uranerz (33 percent) jointly own the world's largest operating uranium mine- Key Lake in Saskatchewan, Canada.
- Cogema (60 percent) and Cameco (20 percent) are majority owners in the Cluff Lake uranium mine, Saskatchewan, Canada.
- Cameco (49 percent) and Cogema (36 percent) are majority owners in the Cigar Lake project.

It appears that this level of concentration of production in conjunction with large inventory levels and slow demand growth will not allow producers to charge a price different from one set by market forces. Of course, it is theoretically possible for the top producers to enter into collusive agreements and act as a cartel.

QUESTIONS FROM SENATOR FORD

Question 7: Does EIA collect data regarding the size of utility inventories of uranium in this country? How large are the inventories, and what is the optimal size stockpile for utilities to have on-hand?

Answer: The EIA collects data in its annual uranium survey on the size and nature of domestic utility uranium inventories. Preliminary data from the 1988 survey indicate 153.5 million pounds of uranium in all forms are in inventory at utility and supplier facilities. Published inventory data for U.S. utilities from the Uranium Industry Annual 1987 follows.

U.S. Utility Inventories of Natural and Enriched Uranium
(domestic and foreign origin)

	Million Pounds U_3O_8	
Yearend	Natural U_3O_8 and UF_6	Enriched Uranium
1978	51.2	20.0
1979	55.2	30.4
1980	75.4	33.4
1981	88.2	19.4
1982	99.1	37.9
1983	93.2	64.2
1984	96.7	63.5
1985	88.2	64.9
1986	84.0	60.0
1987	85.0	52.4

In recent years, U.S. utility inventories of natural and enriched uranium have averaged a 4 to 5-year forward coverage of estimated feed deliveries to domestic and foreign enrichment suppliers. However, individual utilities hold varying amounts of uranium in their inventories. The inventory of a particular form of uranium may reflect a utility's inventory policy, or it may result from unplanned or unexpected conditions.

As a general rule, domestic utilities try to keep their inventories of particular forms of uranium as low as possible while still assuring that they meet their contractual commitments for deliveries to conversion and enrichment plants. The most frequently reported desired inventory level expressed as forward coverage (i.e., months of requirements for natural uranium) was 12 months. This average excluded utilities that desired no forward coverage. As a result of the resolution of the miners' law suit with the Department of Energy, interest in holding certain types of uranium in inventory (i.e., domestic vs. foreign) has dissipated, and should provide another force for lowering inventory levels.

QUESTIONS FROM SENATOR FORD

Question 8(a):	Dr. Merklein, your testimony focuses on the EIA viability criteria of "Import Commitment Dependency." Can you please summarize how the U.S. uranium industry fared on the other three criteria?
Answer:	The Energy Information Administration evaluated the capability of the industry with respect to the four primary criteria established by the regulation. Those criteria are: resource capability, supply response capability, financial capability, and import commitment dependency.

Resource capability is defined as the extent to which domestic economic uranium reserves can supply domestic nuclear power needs for a future 10-year period. The EIA analysis, based on estimates supplied by U.S. producers of the amounts of uranium available for sale over the next 10 years, indicates that the reserves are sufficient to supply domestic nuclear power under plausible assumptions of a wide range of potential future conditions.

Supply response capability involves a measure of the level of domestic uranium production capability sufficient to meet projected nuclear power needs for a future 10-year period. The EIA analysis shows that, if a supply disruption were to occur in early 1989, the industry has the technical capability to fulfill cumulative uranium security requirements over the next 10 years. If a disruption were to occur in 1996, the projected capability would nearly satisfy requirements in the year following the disruption; and, the projected shortfalls might be met by increased inventory drawdowns. In subsequent years, the production capacity is projected to increase to the levels needed to meet the requirements. The technical capability of the industry is dependent on the ability of the industry to generate funds. Thus, the supply response capability must be reviewed in conjunction with the financial capability of the industry.

Financial capability is the ability of the domestic uranium mining and milling industry to obtain sufficient funds to finance an adequate supply response capability. To maintain an adequate supply response capability in the future, capital expenditures higher than those projected without an import disruption would be necessary. The potential to raise the required investment funds would be dependent on higher revenues and expectations of profitability. Neither higher revenues nor improved profitability are expected for the uranium industry in the next several years.

Import commitment dependency measures whether executed contracts or options for imported source material or special nuclear will result in more than 37.5 percent of actual or projected domestic uranium requirements for any two consecutive calendar years. In 1986, U.S. utilities imported 43.8 percent of their uranium requirements; and in 1987, U.S. utilities imported 51.1 percent of their uranium requirements. Thus, utilities imported more than 37.5 percent of their uranium requirements for the two consecutive year period 1986 through 1987.

Since imports of uranium have exceeded the 37.5 percent criterion, the Secretary of Energy has requested, as required by Section 170(B) of the Atomic Energy Act of 1954, as amended, the Secretary of Commerce to initiate an investigation under Section 232 of the Trade

Expansion Act of 1962 to determine the effects on national security of these imports.

QUESTIONS FROM SENATOR FORD

Question 8(b): How many of the criteria must be met for the Secretary to declare the industry viable?

Answer: The four criteria as well as other data and projections are used by the Energy Information Administration in preparing the annual viability assessment of the domestic mining and milling industry. The criteria are used as indicators of the condition of the industry. Except in the case of import commitment dependency where the law requires particular steps under defined circumstances, there is no absolute measure for determining if a criterion is met.

The Secretary makes his annual viability determination on the relative strength or weakness of the industry based on all the information provided in these annual assessment reports on the domestic uranium industry's viability.

QUESTIONS FROM SENATOR FORD

Question 9:	Please describe the industry practice of "Flag Swaps" for the Committee? Is it legal?
Answer:	In international nuclear trade a transaction known as an obligation swap is sometimes referred to as a "flag swap." Obligations are the conditions placed by supplier countries on the use of nuclear material by importing countries under the terms of intergovernmental nuclear cooperation agreements or "bilaterals." Obligations can be thought of as "flags" attached to the nuclear fuel indicating the bilateral agreements under which it is obligated. In an obligation swap, material origins are unaffected. The obligations pertaining to one quantity of nuclear fuel situated in one location are exchanged for the obligations pertaining to another equivalent quantity of nuclear fuel at another location. All the other characteristics of both quantities of fuel including origin are unaffected. In an obligation swap the actual quantities of nuclear fuel remain in their respective locations, but each quantity becomes subject to the bilateral that previously governed the other; in other words; the "flag" associated with each quantity of material is removed and "swapped" with the

other equivalent quantity of nuclear fuel. The international and complex nature of the nuclear fuel cycle can lead to "multiple flags" where a quantity of nuclear fuel becomes subject to the obligations of several bilaterals.

There are a number of legitimate reasons why companies find it advantageous to swap "flags." These include avoiding the cost of transportation including shipping, physical protection to assure public safety, and the costs of safeguards, as well as minimizing the administrative complication of accounting for material under multiple flags in the same reactor.

We would also like to clarify for the record the definition of country of origin. There are two definitions and their use is often misunderstood. Geographic origin is defined as the country in which the uranium was originally mined and milled. Customs origin is the origin as determined by the legal customs authorities and used in implementing government requirements. Rules of customs origin vary across countries, the most important factor being the extent to which processing in a third country changes the customs origin.

Some people have assumed that obligation swaps or "flag swaps" will naturally result in a change in the national identity of nuclear fuel. However, it should be noted that in view of the confusion that has been reported outside the industry over the misuse of references to "flag swaps," that customs origin is not determined by the obligations pertaining to the fuel. Exchanges of obligations between quantities of nuclear fuel do not imply the exchange of customs origin.

While some of the hypothetical "deals" which have been discussed outside the industry as examples of "flag swaps" may serve to illustrate the process of transferring obligations between quantities of nuclear fuel, they would not alter the origins of the fuel according to customs requirements.

Under the bilateral agreements between the United States, Canada, and Euratom, all potential international swap transactions (i.e., material located in two different countries) are subject to prior approval on a case-by-case basis. As regards to international swaps of U.S. obligated nuclear fuel, the Department of State applies the following criteria:

The United States will consider requests for international obligation swaps only when the objectives of a swap cannot be met by ownership exchange or internal swaps (also known as "substitutions"). Approval for international swaps is given on a case-by-case basis according to the following criteria:

-- the transaction must not result in a diminution of U.S. nonproliferation controls on nuclear material;

-- the transaction must not result in any degradation of the nonproliferation situation in a particular country or facilitate a transaction of nonproliferation concern;

-- the transaction must result in a situation of equivalency of quantity and isotopic composition subject to the U.S. nonproliferation controls;

-- the transaction must be consistent with the U.S. export licensing process, the U.S. subsequent arrangement approval process and all other U.S. legal requirements.

Internal obligation swaps (also known as "substitutions") are swaps between equivalent quantities of material held in the same country or jurisdiction (e.g., the European Community). They require, of course, the permission of the authority which is responsible for the tracking of material to which obligations apply, which is usually the national government or the Euratom Safeguards Inspectorate. Whether they also require the permission of the governments whose obligations are attached to the material depends on the terms of the agreement creating such obligations. In practice, the three countries imposing the important obligations in nuclear trade, the U.S., Canada, and Australia, have in the terms of their bilateral cooperation agreements given permission for internal obligation swaps in the U.S. and the European Community.

For internal obligation swaps (i.e., substitutions) within the United States, the Nuclear Regulatory Commission is informed but does not at present exercise a right of prior review. However, proposed "nonequivalent" internal swaps involving different quantities of material or uranium in different physical forms are currently referred to the Department of State for approval. This is to assure that U.S. commitments made as bilateral agreements are honored. The general guidelines for internal swaps involving Low Enriched Uranium (LEU) are:

- the quantities of LEU correspond to the same equivalent normal;
- if appropriate, obligations are also swapped on the tails so that the total amounts of uranium subject to the relevant bilaterals remain the same;
- where applicable, U.S. commitments to bilateral partners on implementing the principle of fungibility are respected;
- all nuclear material involved is of an assay no greater than 5 percent U-235.

Obligation swaps should not be confused with ownership exchanges, where ownership between two quantities of nuclear material is exchanged, while the nonproliferation obligations remain the same. An ownership exchange is sometimes referred to as a "title swap" or an "exchange." An ownership exchange is equivalent to two matching buy and sell transactions. The exchange is typically accomplished through a book transfer between the accounts of the parties at the facility or facilities where the material is located. Ownership exchanges of U.S. nuclear material subject to U.S. laws or agreements may be undertaken across international borders without obtaining permission of the U.S. Government. United States law and nuclear cooperation agreements regulate possession not ownership of nuclear material.

QUESTIONS FROM SENATOR FORD

Question 9(a): What percentage of transactions involve swaps?

Answer: In international nuclear trade a transaction known as an obligation swap is sometimes referred to as a "flag swap." An obligation swap is an exchange of nonproliferation obligations between quantities of nuclear material. Obligation swaps involving U.S. nuclear material are well documented and the facts associated with nuclear material that enters the United States are known by the uranium origin and the source of enrichment at the point at which it enters the United States. However, it should be noted that other transactions, such as exchanges, loans, or leases can take place before nuclear material enters the United States. These transactions are not reported and therefore not identified even though they could subsequently enable a transaction involving the nuclear material that enters the United States to occur. The data collected by the Nuclear Materials Management and Safeguards System on flag swaps are restricted to the more narrow definition identified above and the number of transactions involving flag swaps are necessarily limited to that definition.

With respect to the number of transactions involving flag swaps or more appropriately obligation swaps, the U.S. Government has received only two such requests for international obligation swaps (flag swaps) since the State Department policy was published in 1987. One of these came from a U.S. utility that wanted to swap natural UF6 located in Canada which carried Canadian obligations, for an equivalent quantity of natural uranium contained in unirradiated fuel assemblies of low enrichment located in the United States. The United States and the Canadian governments declined to approve this request on the grounds that this exchange of different quantities of material of different isotopic composition would be at variance with the nonproliferation policies of both governments.

A second request involved the swapping of obligations on natural uranium across two borders for eventual use in the United States. The two quantities of nuclear material (uranium oxide) were identical in weight, in chemical composition and in concentration of the fissionable isotope U^{235}. The swap involved an exchange of legal rights and obligations on nuclear material which had been in Europe under the U.S.-Euratom agreement, for nuclear material that had been located in Canada. The material in Euratom ceased being subject to the U.S.-Euratom Agreement for Cooperation and became subject to the terms and conditions of the Agreement for Cooperation between Canada and Euratom. The material in Canada became subject to the U.S.-Canada agreement and was then physically transferred to the United States. The three parties, the United States, Canada, and Euratom, agreed to the obligation swap as each concluded that it was not contrary to its respective nonproliferation interests.

Prior to 1987 there were six international obligation swaps of natural uranium located in the United States with natural uranium located in the United Kingdom, Canada, France, and the Federal Republic of Germany.

The U.S. Government has received only two requests to substitute obligations on enriched uranium within the United States. These transactions involved various quantities of low enriched uranium owned by U.S. firms all of which were physically located within the United

States. These transactions involved the substitution of certain quantities of nuclear material subject to the U.S.-Australia and U.S.-Canada agreements for peaceful nuclear cooperation for certain other quantities of nuclear material of U.S. origin which was unencumbered by the legal rights or obligations of any other country or group of countries.

In approving these requests, the U.S. government has reaffirmed to the parties involved, the principle that in transferring the obligations on the nuclear material, the geographic origin (i.e., where the uranium was mined) would not be changed.

Since 1982 there have been about 200 internal obligation swaps of natural uranium between U.S. domestic facilities, an average of 29 transactions per year. The Nuclear Materials Management and Safeguards System (NMMSS) processes about 90,000 transactions per year. Thus, all obligation swaps represent less than one percent of NMMSS transactions.

Most of the NMMSS reported obligation swaps are for the purpose of avoiding transport and accounting costs and are not in fact "market transactions." The Form EIA-858 collects information on ownership exchange which is a better measure of market transactions. The term ownership exchange is used to describe a transaction where ownership between two quantities of nuclear material is exchanged, while the nonproliferation obligations remain the same. An ownership exchange is sometimes referred to as a "title swap" or an "exchange." An ownership exchange is equivalent to two matching buy and sell transactions. The exchange is typically accomplished through a book transfer between the accounts of the parties at the facility or facilities where the material is located. According to EIA's 1988 data, ownership exchanges represent about 10 percent of all uranium market transactions. It should be noted that this percentage does not include other types of transactions such as foreign displacement sales, leases, and loans.

QUESTIONS FROM SENATOR FORD

Question 9(b): Does the EIA monitor these swaps? Is it possible for the U.S. to keep track of swaps that occur outside the United States and do not involve U.S. companies?

Answer: The Energy Information Administration does not monitor obligation swaps through EIA surveys. The EIA does have access to the DOE/NRC-741 information which accounts for every obligation swap involving nuclear material subject to U.S. obligations.

It is not possible under current bilateral agreements to monitor international obligation swaps that occur outside the United States which do not involve U.S. nuclear material. As indicated earlier, transactions such as exchanges, loans, and leases that occur prior to the actual transaction involving nuclear material that enters the United States are not reported and therefore not extractable from existing reports. However, the U.S. Government does monitor and consider for approval all proposals for international obligation swaps involving U.S. nuclear material outside the United States involving any owner (domestic or foreign) of the material.

QUESTIONS FROM SENATOR FORD

Question 9(c):	Is it impossible to determine accurately the origin of uranium that is imported into this country?
Answer:	We believe the origin (i.e., where natural uranium was mined or the country in which it was substantially transformed to UF6) is well defined by the international rules on customs reporting, and well understood by those in the nuclear industry who are licensed to possess nuclear material.

Our discussions with officials involved in the actual possession, transport, and processing of nuclear material affirm our belief that the origin of nuclear material is being properly reported to the U.S. Government.

If misreporting or fraudulent representation occurs, it would, of course, introduce a bias into the statistics. We are taking initiatives to coordinate our data collections with the Department of State, the Nuclear Regulatory Commission, and the U.S. Customs Service as well as the nuclear fuels industry to assure we can accurately determine the origin of uranium, the obligations to which it is subject, and the location where it may have been enriched. However, as indicated previously, it is not possible under current bilateral agreements to monitor international obligation swaps that occur outside the U.S. which do not involve U.S. nuclear material.

QUESTIONS FROM SENATOR FORD

Question 10: How many sales are made to the U.S. as a result of displacement of inventories -- What you called inventory swapping?

Answer: By my reference to inventory swapping I was referring to displacement sales. In a displacement sale, the purchasing non-U.S. utility already has uranium under contract for delivery or in inventory, so it sells to a U.S. utility an amount of uranium from its inventory equivalent to what it is receiving from another source such as the USSR to keep its supply position in equilibrium. The non-U.S. utility could be enticed to do so by being offered the displacing uranium at a discount off the spot price, later delivery, improved payment terms, or a combination of the above. The EIA does not monitor foreign displacement sales.

QUESTIONS FROM SENATOR FORD

Question 10(a): You say that the EIA data collection does not reveal these swaps, does the DOE/NRC 741 form reveal these swaps?

Answer: The DOE/NRC 741 would not reveal such swaps.

QUESTIONS FROM SENATOR FORD

Question 10(b): If not, doesn't that make it impossible to track the entry of foreign uranium into this country, including Soviet uranium?

Answer: The uranium delivered to a U.S. utility following a displacement sale is still properly identified as to origin and nonproliferation obligations. What is not identified in a displacement sale is the non-U.S. market transaction leading to Soviet material being received by non-U.S. utilities.

QUESTION FROM SENATOR DOMENICI

Question 1: On page 5 of your testimony, you refer to the considerable number of swaps taking place overseas with Soviet uranium which, in your words, "may affect potential enrichment sales by DOE." Am I incorrect to say that these swaps mask your ability to trace the true origin of some material? Is it possible that these swaps are being performed, to some extent, with that thought in mind?

Answer: The statement, on page 5 of my testimony on considerable inventory swapping occurring overseas, was referring to ownership exchanges and not "flag swaps." It was not meant to imply that the true origin of the material entering the United States is masked.

The surplus of capacity for enrichment services in the world market, together with moderate demand, have resulted in significant inventories of enriched uranium that are available for sale, exchange, or loan. In 1987 and 1988, U.S. electric utilities exchanged approximately 1 million pounds of U_3O_8 for uranium that was enriched in France. It is speculated that some of this enriched uranium would not have been available for exchange unless uranium enriched in the U.S.S.R. had been purchased by European companies. The utility pays less for enriched uranium through such an exchange than for procuring enrichment services. For example, in the March NUEXCO report, the SWU value was $67 per SWU for secondary market enrichment transactions, as compared to $117 per SWU under the DOE Utility Services Enrichment Contract. Sending natural uranium in exchange for enriched uranium is similar to sending feed material to an enrichment supplier.

Based on the descriptions of Flag Swapping in proposed S.1846 in Section 117, an exchange, as described above, would not have been considered a flag swap. When the enriched material enters the United States, the national origin of the source material used to produce the enriched uranium is reported on DOE/NRC-741. Therefore, we are able to trace the origin of the material.

Department of Energy
Washington, DC 20585

June 16, 1989

The Honorable Wendell H. Ford
Chairman
Subcommittee on Energy Research
and Development
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On May 11, 1989, Philip G. Sewell, Deputy Assistant Secretary for Uranium Enrichment, Office of Nuclear Energy appeared before your subcommittee to discuss S. 83, legislation to aid the domestic uranium mining and milling industry.

Following that hearing, you submitted written questions for yourself and on behalf of Senator Pete V. Domenici for our response to supplement the record. Enclosed are the answers to those questions, which also have been sent to Senator Domenici.

If you have any questions, please have your staff call Michael Gilmore on 586-4277. He will be happy to assist.

Sincerely,

Rebecca A. Thompson
for Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosures

cc: The Honorable James A. McClure
Ranking Minority Member

QUESTIONS FROM SENATOR FORD

Question 1: What increase in domestic uranium production do you believe will result from the purchase program contained in Amendment 10?

(a) Will this increase in production be sustained after the five year purchase program is completed?

Answer: The effect of any purchase program on domestic uranium production will be determined by the quantities purchased and the purchase amounts that are attributed to inventories supplied by domestic producers. As a representative example, based upon an average purchase price of $25 per pound of uranium, the $750 million designated in Amendment 10 to S. 83 to purchase domestic uranium would result in purchases of about 30 million pounds of uranium over the 6-year period from 1989 through 1994. Domestic uranium production over this time period is expected to be about 50 million pounds. However, the actual increase in production from this purchase program will depend upon the amount of uranium obtained under the purchase program from inventories currently held by domestic suppliers.

Based upon the Energy Information Administration's Domestic Uranium Mining and Milling Industry Viability Assessment for 1987 (published in December 1988), at the end of 1987, domestic uranium producers held inventories of 24.7 million

Answer 1 (continued): pounds of natural uranium. Even though some of this inventory will most likely not be eligible under the purchase program, its use in the purchase program will cause some delay in increasing domestic uranium production. However, it is expected that production will have to increase to some degree. At this time, it is difficult to determine whether an increase in production would be sustained once the purchase is completed.

QUESTIONS FROM SENATOR FORD

Question 1(b): Will this purchase program contribute further to the boom and bust cycles in the uranium industry?

Answer: As currently designed, the proposed purchase program is smaller and of shorter duration than previous support programs for the domestic uranium industry. Though the purchase program could potentially create an artificial demand stimulus, the magnitude of such an effect is not expected to create a precipitous situation once the program has been completed.

QUESTIONS FROM SENATOR FORD

Question 2(a): How large is the DOE stockpile of enriched uranium? When is that stockpile going to be depleted?

Answer: At the end of FY 1989 (September 30, 1988), the DOE stockpile of low enriched uranium contained the equivalent of just over 10 million separative work units (evaluated at a 0.20 percent U-235 tails assay). All of the low enriched uranium stockpile in excess of the amount needed for working inventory will be depleted by the end of FY 1989.

QUESTIONS FROM SENATOR FORD

Question 2(b): How large is the Government stockpile of natural uranium?

How much of that is allocated to the Department of Energy and how much is allocated to the Department of Defense?

Answer: At the end of FY 1988, the size of the Government-owned stockpile was 85 million pounds of natural uranium. Of this total, about 53 million pounds of natural uranium was allocated for Governmental program purposes and 32 million pounds of natural uranium was available for commercial uses in the uranium enrichment program.

During FY 1989, a substantial portion of this natural uranium stockpile will be used to over-feed the Department's enrichment facilities in order to reduce power costs and generate product needed to meet customer requirements for low enriched uranium. Also, additional quantities of natural uranium will be used from the Government program allocation amount to meet Government programmatic enrichment requirements.

As a result, we currently project that the Government stockpile of natural uranium will be about 69 million pounds by the end of FY 1989 with 50 million pounds remaining in the Government program allocation and 19 million pounds remaining for commercial uses.

QUESTIONS FROM SENATOR FORD

Question 2(c): When is the DOE stockpile of natural uranium feed likely to be depleted?

Answer: Based on current projections, we expect that the portion of the Government stockpile of natural uranium that is available for commercial uses will be depleted in FY 1991. Based on projected firm demands for enrichment from various Government programs, the portion of the natural uranium inventory that is allocated for Government program uses could last for nearly 20 years.

QUESTIONS FROM SENATOR FORD

Question 2(d): What, in your opinion, is an optimal level for the DOE stockpile of natural uranium?

Answer: It is felt that the optimal level for the stockpile of natural uranium represents that amount which allows the uranium enrichment enterprise to minimize its cost of operation. This determination is highly dependent upon the cost of electricity used to power the enrichment plants and the cost of uranium in inventory. The cost for electricity and uranium are very difficult to accurately forecast for the future and therefore a definitive value for the stockpile level that is optimal cannot be determined until these costs are known. However, based upon current estimates of electricity and uranium costs, the most cost effective inventory level for natural uranium would be approximately that amount that is now available in the Department's inventory.

QUESTIONS FROM SENATOR FORD

Question 3: In your opinion, what percentage of the uranium sales take place in the spot market?

Answer: The data collected in the Energy Information Administration's Uranium Industry Annual Survey show that in 1987, spot sales to U.S. companies represented about 31 percent of total sales (by volume), and in 1988, preliminary data show that about 22 percent of the sales (by volume) to U.S. companies were in the spot market.

The Energy Information Administration does not collect spot sales statistics for the world market. Price and uranium sales data are only collected from foreign companies when they are engaged in a contract with a U.S. company or are doing business in the United States. The above statistics represent a reasonable approximation of the proportion of spot sales in the world market.

QUESTIONS FROM SENATOR FORD

Question 3(a): Are deliveries under long-term contracts being made at spot market prices? If so, which countries are making those deliveries?

Answer: As background, a definition of long-term contracts is appropriate. A long-term contract is defined as a purchase contract, whereby at least one delivery of material will occur on a date more than 1 calendar year after the calendar year the contract was signed. Deliveries can also be made within the year of signing under a long-term contract as long as future deliveries are involved. For example, if a contract was signed in 1989 for delivery of material in each year starting in 1989 through 1995, this would be classified as a long-term contract. However, if a contract was signed in 1989 for delivery of material in 1989 and 1990 only, this would be called a spot purchase.

If a delivery of material under a long-term contract occurs in the same year that the contract was signed, the price of the material in that year will usually be at the current spot market price. The price will be escalated at some rate for the remaining years of the contract.

Answer 3(a) (continued):	The data indicate that, on the average, deliveries under long-term contracts are being made at a price significantly above the spot market price.

In 1987, approximately 7 million pounds out of the 19.4 million pounds delivered under long-term contracts were priced at approximately $16.75 per pound, the average spot market price in 1987. Of this amount, 4 million pounds were of Canadian origin, and the remaining 3 million pounds were of U.S. origin. In 1988, approximately 10 million pounds out of the 23.2 million pounds delivered under long-term contracts were priced at the spot market level. Six million pounds were of Canadian origin, and the remaining 4 million pounds were from the United States. All other uranium imports (approximately 9 to 10 million pounds) in 1987 and 1988 were priced on a basis higher than spot market price values.

QUESTIONS FROM SENATOR FORD

Question 3(b): Are you aware of any countries with floor prices for uranium that may be required by the export policy of that country? If so, which countries? Are spot market prices now below these floor prices? Are any of these countries making deliveries at spot market prices? If so, how can this be?

Answer: In the 1970's, Canadian uranium export policy required that uranium producers receive a price that covered their cost of production plus profits. In the early 1980's, the Canadian Government modified its export policy to approve market-priced contracts with floor prices low enough to enable Canadian producers to capture sales as long as the particular producer could show his investment was adequately protected. To achieve the above requirement, each export contract is reviewed, thereby eliminating the need for mandatory proscriptions. Given this flexibility, it is not clear whether all contracts do, in fact, compute sale prices based on full cost recovery (sunk capital costs and current operating costs) or on the basis of forward marginal costs (current operating costs and current or future capital outlays). Note should also be taken of the fact that Canada has uranium resources that can be worked at or below prevailing depressed uranium prices.

Answer 3(b) (continued): Nonetheless, Canadian producers in 1988, secured an average of $20.41 per pound of uranium with respect to their export contracts during the year to the United States.

Australia, which has no nuclear power program, seeks to assure its producers of minimum prices and to ensure its uranium does not contribute to the proliferation of nuclear weapons. Australia controls production of uranium by limiting the number of producing mines to three.

The Australian floor price was initially set at $US30.00 as of January 1, 1980. At that time, the Nuexco Exchange Value was $40.00. As the market price declined below the Australian floor price in September 1980, Australian producers were prevented from entering new export contracts, resulting in a leveling off of production. The Australian government has since made several adjustments to export policy in attempting to stimulate sales to the United States. The first revision allowed escrowed credits of payments in excess of the spot market price toward future invoices if the spot price were to exceed the floor price at the time of a subsequent sale. The policy was later revised to permit producers to curtail deliveries from Australian production and purchase for delivery from the spot market, or to permit customers to buy on the spot market when the spot market

Answer 3(b)
(continued):

falls below Australia's floor price. In 1986, the Australian government re-established the floor prices to average $31 for the duration of the contract for long-term contracts and $28 for short duration contracts. In spite of its floor price policy, Australian producers can make deliveries of non-Australian uranium purchased on the spot market at the spot market prices.

The Nuexco Exchange Value (i.e., spot price) on April 30, 1989, was $10.10 per pound of U308, well below the stated Australian floor price.

Australian uranium is subject to the floor price only for export from Australia. After the first sale, it is then free of the floor price. Thus, an Australian producer could deliver uranium to Utility A under the contract price at $30 per pound. He could then borrow back the uranium, paying Utility A the Nuexco loan rate of 3.5 percent on the $30 per pound value and sell the uranium to Utility B below the floor price.

QUESTIONS FROM SENATOR FORD

Question 4:	What percentage of transactions in the spot market involve flag swaps?
Answer:	In international nuclear trade, a transaction known as an obligation swap is sometimes referred to as a "flag swap." An obligation swap is an exchange of nonproliferation obligations between quantities of nuclear material. Obligation swaps involving U.S. nuclear material are well documented and the facts associated with nuclear material that enters the United States are known by the uranium origin and the source of enrichment at the point at which it enters the United States. However, it should be noted that other transactions, such as exchanges, loans, or leases, can take place before nuclear material enters the United States. These transactions are not reported and, therefore, not identified even though they could subsequently enable a transaction, involving the nuclear material that enters the United States, to occur. The data collected by the Nuclear Materials Management and Safeguards System on flag swaps are restricted to the more narrow definition identified above and the number of transactions involving flag swaps are necessarily limited to that definition.

Answer 4 (continued): With respect to the number of transactions involving flag swaps or more appropriately obligation swaps, the U.S. Government has received only two such requests for international obligation swaps (flag swaps) since the State Department policy was published in 1987. One of these came from a U.S. utility that wanted to swap natural UF6 located in Canada which carried Canadian obligations, for an equivalent quantity of natural uranium contained in unirradiated fuel assemblies of low enrichment located in the United States. The United States and the Canadian governments declined to approve this request on the grounds that this exchange of different quantities of material of different isotopic composition would be at variance with the nonproliferation policies of both governments.

A second request involved the swapping of obligations on natural uranium across two borders for eventual use in the United States. The two quantities of nuclear material (uranium oxide) were identical in weight, in chemical composition, and in concentration of the fissionable isotope U235. The swap involved an exchange of legal rights and obligations on nuclear material which had been in Europe under the U.S.-Euratom Agreement, for nuclear material that had been located in Canada. The material in Euratom ceased

Answer 4 (continued): being subject to the U.S.-Euratom Agreement for Cooperation and became subject to the terms and conditions of the Agreement for Cooperation between Canada and Euratom. The material in Canada became subject to the U.S.-Canada agreement and was then physically transferred to the United States. The three parties, the United States, Canada, and Euratom, agreed to the obligation swap as each concluded that it was not contrary to its respective nonproliferation interests.

Prior to 1987, there were six international obligation swaps of natural uranium located in the United States with natural uranium located in the United Kingdom, Canada, France, and the Federal Republic of Germany.

The U.S. Government has received only two requests to substitute obligations on enriched uranium within the United States. These transactions involved various quantities of low enriched uranium owned by U.S. firms all of which were physically located within the United States. These transactions involved the substitution of certain quantities of nuclear material subject to the U.S-Australia and U.S.-Canada agreements for peaceful nuclear cooperation for certain other quantities of nuclear material of U.S. origin

Answer 4 (continued): which was unencumbered by the legal rights or obligations of any other country or group of countries.

In approving these requests, the U.S. Government has reaffirmed to the parties involved, the principle that in transferring the obligations on the nuclear material, the geographic origin (i.e., where the uranium was mined) would not be changed.

Since 1982, there have been about 200 internal obligation swaps of natural uranium between U.S. domestic facilities, an average of 29 transactions per year. The Nuclear Materials Management and Safeguards System (NMMSS) processes about 90,000 transactions per year. Thus, all obligation swaps represent less than 1 percent of NMMSS transactions.

Most of the NMMSS reported obligation swaps are for the purpose of avoiding transport and accounting costs and are not in fact "market transactions." The Form EIA-858 collects information on ownership exchange which is a better measure of market transactions. The term ownership exchange is used to describe a transaction where ownership between two quantities of nuclear material is exchanged while the nonproliferation obligations remain the same. An ownership exchange is sometimes referred to as a "title swap" or an

Answer 4
(continued):

"exchange." An ownership exchange is equivalent to two matching buy and sell transactions. The exchange is typically accomplished through a book transfer between the accounts of the parties at the facility or facilities where the material is located. According to EIA's 1988 data, ownership exchanges represent about 10 percent of all uranium market transactions. It should be noted that this percentage does not include other types of transactions, such as foreign displacement sales, leases, and loans.

QUESTIONS FROM SENATOR FORD

Question 4(a): Does the DOE monitor these swaps? Is it possible for the United States to keep track of swaps that occur outside the United States and do not involve U.S. companies?

Answer: It is not possible under current bilateral agreements to monitor international obligation swaps that occur outside the United States which do not involve U.S. nuclear material. As indicated earlier, transactions such as exchanges, loans, and leases that occur prior to the actual transaction involving nuclear material that enters the United States are not reported and therefore not extractable from existing reports. However, the U.S. Government does monitor and consider for approval all proposals for international obligation swaps involving U.S. nuclear material outside the United States involving any owner (domestic or foreign) of the material. The DOE/NRC-741 information accounts for every obligation swap involving nuclear material subject to U.S. obligations.

QUESTIONS FROM SENATOR FORD

Question 4(b):	Is it impossible to determine accurately the origin of uranium that is imported into this country?
Answer:	EIA believes the origin (i.e., where natural uranium was mined or the country in which it was substantially transformed to UF6) is well defined by the international rules on customs reporting, and well understood by those in the nuclear industry who are licensed to possess nuclear material. Discussions between EIA officials and those involved in the actual possession, transport, and processing of nuclear material affirm EIA's belief that the origin of nuclear material is being properly reported to the U.S. Government. If misreporting or fraudulent representation occurs, it would, of course, introduce a bias into the statistics. EIA is taking initiatives to coordinate data collections with the Department of State, the Nuclear Regulatory Commission, and the U.S. Customs Service as well as the nuclear fuels industry to assure that EIA can accurately determine the origin of uranium, the obligations to which it is subject, and the location where it may have been enriched. However, as indicated previously, it is not possible under current bilateral agreements to monitor international obligation

Answer 4(b) (continued): swaps that occur outside the United States which do not involve U.S. nuclear material.

QUESTIONS FROM SENATOR FORD

Question 5: In the 100th Congress, the Administration supported a cost-sharing program, the cleanup of active uranium and thorium mill tailings sites. Many proposals that have been put forth allocate one-third of the responsibility for the cost of cleanup to the Federal Government. This corresponds to the fact that one-third of the tailings produced at these mill sites were produced for direct sales to the Government.

- Do you think that this is an equitable sharing of the costs?
- Do you still support a cost-sharing program for the cleanup of those tailings? If no, why not? Does this indicate that you don't think that the tailings should be stabilized or that there should not be a Government role in the cleanup effort?

Answer: A requirement to stabilize and cleanup active uranium and thorium mill tailings sites currently exists and the Administration supports the need to ensure that this requirement is met in a responsible manner. Title II of the Uranium Mill Tailings Radiation Control Act of 1978 assigns this responsibility to active owners and licensees of mill tailings sites. In previous testimony and responses to Congress, the Department has affirmed its belief that it is appropriate for the owners and licensees of active mill sites to bear the costs of cleaning up those sites, consistent with the direction in the Uranium Mill Tailings Radiation Control Act of 1978.

We understand that representatives of the utilities and the uranium industry have reached an accord on this issue.

Answer 5 (continued): Although the Administration continues to support the provisions of the Uranium Mill Tailings Radiation Control Act, we are willing to work with Congress and industry representatives to determine an equitable resolution of this issue.

QUESTIONS FROM SENATOR FORD

Question 6:	What is your preliminary estimate of the cost of cleanup of the uranium mill tailings specified in Amendment 10?
Answer:	The Department has not conducted detailed studies of the cost of reclamation at the Title II (active) sites. Based on our ongoing experience at Title I (inactive) sites, we have estimated the cost of Title II remedial actions in the range of $5 to $10 per dry ton, but higher or lower costs are not precluded. This estimate results from modifying actual Title I cost experience by accounting for economies of scale (total tailings at Title II sites are nearly an order of magnitude greater than at Title I sites), a low probability that Title II tailings piles will be relocated, presumed lower management oversight costs, and lower labor costs since Title II sites will not be subject to Davis-Bacon wage rates. Based on these assumptions, our estimate of total reclamation costs is approximately $1 billion. It should be noted that the proposed amendment limits reimbursement of mill owners and licensees to $4.50 per dry ton, or a total of about $1 billion.

QUESTIONS FROM SENATOR FORD

Question 7:	Please provide an estimate of how much cleanup costs for the uranium mill tailings sites will increase if amendment 10 was modified to change the definition of "Tailings" in the legislation. Specifically, how much would costs increase if the definition of tailings was modified to allow for the movement of contaminated soil and other materials to an off-site location, if warranted, for stabilization purposes.
Answer:	Our experience with the Title I sites is that additional quantities of materials, equivalent to more than 50 percent of the quantity of tailings, are also being stabilized. This includes vicinity property materials and on-site and off-site soils containing windblown contamination from the tailings. We have no data at this time to estimate the quantities of other materials to be stabilized at Title II sites. However, the Title II estimates presented in the response to Question 6 assume that a similar proportion of other contaminated materials would also be stabilized. Regarding the movement of materials to off-site locations, the estimate in the response to Question 6 presumes a high probability that Title II sites will not require relocation. Assuming relocation of materials from some sites would tend to push the estimates to the high side of the ranges provided or perhaps to even higher levels.

QUESTIONS FROM SENATOR DOMENICI

Question 1: Mr. Sewell, your statement is replete with statements about how the uranium mining industry has been dealt setbacks in the courts and in the marketplace. The testimony seems to be saying that is how it should be.

(a) You have one statement that says, "a healthy, secure indigenous nuclear industry is in our country's best interests." Does that mean the mining industry also?

Answer: A healthy, secure, indigenous uranium mining industry is in the country's best interest.

QUESTIONS FROM SENATOR DOMENICI

Question 1(b): Your statement does not recount that fact that we had a compromise which passed the Senate twice and which had Administration support. Do you recall that? Is the Bush Administration opposed to the Reagan Administration's compromise?

Answer: As you indicated when you introduced your amendment, a number of circumstances that permitted the forging of last year's compromise have changed. In view of this, the Administration does not feel that it should continue to advocate a compromise to which the principals themselves no longer adhere.

QUESTIONS FROM SENATOR DOMENICI

Question 1(c):	We have a mill tailings cleanup section in my legislation. Is the Administration willing to pay for the cleanup of those mill tailings which were generated at their demand?
Answer:	The Department believes that it is more appropriate for the owners and licensees of active mill sites to bear the costs of cleaning up those sites. We would have to study the details of any new compromise to determine whether the benefits were sufficiently compelling to adjust the legal obligation of mill owners to clean up the tailings. In the meantime, we believe that legislation to restructure the uranium enrichment enterprise should go forward.

QUESTION FROM SENATOR DOMENICI

Question 1(d): The EPA has proposed lower radon standards which would affect the existing DOE cleanup as well as the private sector's. Even though the proposed standards are lower than background levels, EPA says a source of emissions "does not present an acceptable risk simply by being less than natural background." Do you agree with that? Did DOE have input on these proposed standards? What will it mean for the tailings which you have already reclaimed?

Answer: EPA has reviewed the radon flux standard as part of their proposed revision to 40 CFR 61 (National Emission Standards for Hazardous Air Pollutants; Regulation of Radionuclides). DOE has provided EPA background information to support their review and has submitted formal comments on the proposed standard. In the case of the uranium mill tailings sites, EPA proposed to lower the radon emission standard for mill tailings piles from 20 pCi/m sec to 6 pCi/m sec indicating that 20 resulted in unacceptable levels of risk. We believe that the risks estimated by EPA are conservative, representing an upper limit higher than any risks the population may actually face. Many factors used by EPA, including radon risk conversion factors, radon dispersion models, average radium concentrations in the wastes, radon concentration to flux conversion factors and locations are conservative and, hence, overestimate potential risk. Reducing the standard as EPA has proposed may result in a decrease in cancer incidence on the order of 0.03 cancers per

Answer 1(d)
(continued):

year. This is clearly an insignificant reduction in cancers when compared to the total number of cancers that will occur in the affected population. Consequently, the Department does not believe the action is warranted or justifiable. We believe that the 20 pCi/m sec design standard provides protection to an acceptable level of potential risk (when compared to other risks individuals are willing to accept daily) and provides an adequate margin of safety. For example, the risks are of the same order of magnitude as being killed by electrocution or lightning.

At present we do not know the impact of the proposed standard on completed sites. The present standard is a design standard; flux measurements are not made to demonstrate compliance. Design conservatism may minimize the impacts of the standard, however, it is not possible to determine this with the data that is presently available.

We do not disagree that background may not always represent a good measure of an acceptable level of risk; however, we do disagree with EPA's finding that the 20 pCi/m sec design standard does not represent an acceptable level of risk. Radon emissions from stabilized tailings sites will have very little effect on average outdoor radon concentrations. Beyond several hundred meters, there is no measurable increase in background radon concentrations. Furthermore, if

Answer 1(d) (continued): any increase does exist, it is limited to outdoor radon concentrations which in total may be an order of magnitude, or more, less than indoor concentrations. As a result, the risk that might be associated with radon exposure is clearly controlled by the exposure to indoor radon and the effects of emissions from tailings piles to the atmosphere are insignificant. Because the potential risks associated with radon emissions from the tailings are insignificant in comparison to the average risks from indoor radon, such risks must be considered in the acceptable range.

QUESTIONS FROM SENATOR DOMENICI

Mr. Sewell, I want to ask you about the system we use in the U.S. to set spot market prices for natural uranium and enriched uranium. The reason I believe this is important is that I am afraid that certain of these companies might use their inside knowledge of spot market prices to manipulate the market for their own gain. They have the potential of costing ratepayers tens of millions of dollars. They may also be responsible for the incredible fall in the spot market price from $17.00 to below $10.00 per pound.

Question 2(a): I understand that there are three companies which publish prices which the industry uses. Is that correct?

Answer: There are three major uranium trading firms in the U.S. that publish prices which the industry uses. These price reports are typically produced monthly and contain various data elements including information and recommendations concerning the uranium market. The three leading uranium brokerage firms in the U.S. are: Nukem, Nuexco, and the Uranium Exchange Co.

QUESTIONS FROM SENATOR DOMENICI

Question 2(b): I understand that these companies have, within the last several years taken on a new role in the marketplace. In the past there were a few companies which acted as brokers -- that is, they brought willing buyers and sellers together and got a $0.25 per pound commission on the sale. Now, some of those companies are acting as traders rather than brokers. They buy and sell uranium as well as report the spot market price. Is that correct?

Answer: It is correct to say that the above brokerage firms buy, sell, and hold uranium inventory on their own account. Additionally, they publish spot market prices, and loan rates for uranium transactions.

QUESTIONS FROM SENATOR DOMENICI

Question 2(c): One of these companies accounts for 88 percent of spot market transactions. Is that correct?

Answer: We are not in a position to determine the share of each of the above firms, but from the information we do have, 88 percent of all spot market transactions does not appear to be correct. We estimate that the total spot market transactions of all three of these trading companies account for about 60 to 70 percent of all spot market transactions. It is also generally known that one of the companies has a larger market share than the others.

QUESTIONS FROM SENATOR DOMENICI

Question 2(d): To my knowledge, none of these publishers and traders are regulated. Is that correct?

Answer: To our knowledge none of the three firms are subject to Securities and Exchange Commission regulations.

QUESTIONS FROM SENATOR DOMENICI

Question 2(e): To my knowledge, none of these companies are publicly held so that their "books" are available for review. Is that correct?

Answer: Since the major brokerage firms are privately owned, there is no requirement for them to submit filings to the Securities and Exchange Commission. They are not subject to submission of public annual reports or federal review of accounting practices.

QUESTIONS FROM SENATOR DOMENICI

Question 2(f): Now, I am going to give you some scenarios which I have asked the staff to prepare. They are scenarios whereby a spot market price publisher who is also a trader might manipulate the spot price to make money beyond what a simple broker could do. I want to stress that I am not asking you whether any of these scenarios has actually happened, only whether they are possible.

SCENARIO A Declining Price -- Broker/Publisher Sells Short

1. A broker who also publishes a widely accepted uranium price index ("Broker/Publisher"), e.g., Nuexco, publishes a price of $12/lb. U_3O_8 in Month One

   Trade One

   The Broker/Publisher contracts to sell 500,000 lbs. of uranium at $12.00/lb. to Utility A for delivery in 10 months (sells short) -- it has $6 million coming in (not reported immediately because it is a forward contract), but has no U_3O_8 in its inventory at the time of contract.

   Trade Two

   Broker/Publisher contracts to sell 100,000 lbs. of uranium at $11.00/lb. to Utility B for delivery in 2 weeks. It has $1.1 million in revenue.

2. Broker/Publisher publishes price of $11.00/lb. U_3O_8 in Month Two

   Trade Three

   Broker/Publisher contracts to purchase a total of 900,000 lbs. of uranium at the rate of 100,000 lbs. a month for 9 months at the $11.00/lb. published price from a utility who has to dispose of inventory.

   Trade Four

   Broker/Publisher contracts to purchase a total of 100,000 lbs. of uranium at $11.50/lb. from a producer.

3. Broker/Publisher publishes a price of $11.50/lb. U_3O_8 at the end of Month Three.

   Trade Five

   Broker/Publisher contracts to sell 400,000 lbs. of uranium to Utility C at the $11.50 published price.

NET ECONOMIC EFFECT OF PRINCIPAL TRADING IN THIS SCENARIO

In Trade One Broker/Publisher has first sold short 500,000 lbs. at $12 which it covers at $11/lb. for a profit of $500,000. Then, Broker/Publisher breaks even on Trade Two, but it helps establish a lower price for the ultimate cover, which is Trade Three. In Trade Four Broker/Publisher breaks even when it buys and later sells at $11.50/lb., but this helps move the price back up for Trade Five. In Trade Five, Broker/Publisher is able to sell 400,000 lbs. of which 300,000 lbs. yield a $.50 per lb. profit. Trade Five adds another $150,000 in trading profits. Total profits are $650,000. Note that Utility A and Utility C were gouged by this spread.

SCENARIO B Rising Price -- Broker/Publisher Goes Long

1. A broker who also publishes a widely accepted uranium price index ("Broker/Publisher") publishes a price of $10.00/lb. U_3O_8 in Month One

   Trade One

   Broker/Publisher contracts to purchase 500,000 lbs. of uranium at $9.75 (25¢ off Broker/Publisher Exchange Value because a public utility or a producer needs cash and has to unload.)

   Trade Two

   Broker/Publisher contracts to purchase 40,000 lbs. of uranium at $11.00 per lb. from a domestic producer.

   Trade Three

   Broker/Publisher contracts to buy 50,000 lbs. of uranium at $11.50 per lb. to from a domestic producer or utility with an inventory problem.

2. Broker/Publisher publishes a price of $11.00 per lb. U_3O_8 in Month Two.

   Trade Four

   Broker/Publisher contracts to sell 40,000 lbs. of uranium at $10.50 per lb. to Utility A.

   Trade Five

   Broker/Publisher contracts to sell 50,000 lbs. of uranium at $11.50 per lb. to Utility B.

3. Broker/Publisher publishes a price of $11.50 per lb. U_3O_8 in Month Three

   Trade Six

   Broker/Publisher contracts to sell to Utility C 500,000 lbs. of uranium at $11.50 per lb.

NET ECONOMIC EFFECT OF PRINCIPAL TRADING IN THIS SCENARIO

If you match up Trades One and Six, there is a huge profit of $1.75/lb., i.e., a profit of $875,000. Trades Three and Five wash out, but help establish the higher Exchange Value for Trade Six. In Trades Two and Four, the quantities delivered and received wash, but Broker/Publisher loses $.50 per lb. or $20,000. However, this allows it to increase the Exchange Value. The ultimate net profit is $855,000. Utility A did well and Utility C was defrauded.

SCENARIO C   Decoupling Example

A trader -- such as Nuexco, Nukem or Ux -- would go to a European utility and borrow 1 million pounds of enriched uranium at, say Nuexco's Loan Rate of 3.5% per annum. Note that the Prime Rate is currently 11.5%.

The trader can then:

A. Engage in a straight "flag swap" of the European enriched uranium by selling the European enriched uranium to an American utility and repaying the European utility with Soviet material.

Result

1. DOE loses the sale of enrichment services. These services are cost based, so DOE loses $56 per SWU (Separative Work Unit). DOE's price is $123 per SWU, while Nuexco quotes $67 per SWU.
2. The trader makes a profit of the difference between the Loan Rate and its costs of borrowing, assume the Prime Rate: (1,000,000 lbs. at $10.75/lb. "Exchange Value") X (11.5% prime less 3.5% Loan Rate) = $860,000. Nuexco defines its "Loan Rate" as "Nuexco's judgement of the annual interest rate at which uranium loans could be concluded as of the date indicated."
3. The trader is effectively able to bring Soviet origin material into the United States without saying that it is Soviet.

or B. Engage in a "decoupling" of the European material by selling the European enriched uranium to an American utility, repaying the European utility with Soviet material, as before, and receiving in payment for the enriched European material each of the following three:

1. dollars for the SWU Value, quoted by Nuexco currently at $67/SWU yet sold by the DOE at $123/SWU, plus
2. dollars for the Conversion Value, quoted by Nuexco as currently $1.95/lb. U as UF_6, plus
3. title to some quantity of U_3O_8 held at a conversion facility in the United States.

Result

1. DOE's enrichment services are replaced by Soviet services. As before, DOE loses volume of enrichment services costing DOE and the United States tax payer $56/SWU.
2. The trader makes $860,000 on the spread between the Loan Rate which Nuexco quotes as 3.5% per annum versus its costs of borrowing (conservatively assume the Prime Rate of 11.5%).
3. The trader is effectively able to bring Soviet origin material into the United States without saying that it is Soviet.
4. The trader has a supply of U_3O_8 sitting in a United States conversion facility which can be used to cover its "short" position in Scenario A or put it in a "long" position in Scenario B. In either event, the trader is able to position itself to extract exorbitant profits from the market.

Answer: Scenarios A and B

If, in fact, a broker or trader has sufficient market power to influence short run movements in spot prices, then these scenarios could possibly occur. However, the crucial question is whether these brokers have sufficient market power to influence prices and it is doubtful that they do. EIA's analysis indicates that there is sufficient competition in uranium markets and this competition makes manipulation of spot market prices difficult over any period of time. As long as there are no barriers to entry, it would be difficult for even a small number of participants to influence prices over any period of time. If it were possible to make profits in the manner and magnitude described in these scenarios, additional participants would enter the market and render manipulation of prices difficult over any period of time.

Answer 2(f)
(continued):

Scenario C

We believe that this scenario describes a transaction process that could potentially occur.

[illegible]
White Plains, New York 10601
914 681 6800

New York Power Authority

J. Phillip Bayne
President
and Chief Operating Officer

June 1, 1989

The Honorable Wendell Ford
Chairman
Subcommittee on Energy Research and Development
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Senator Ford:

I want to thank you for giving me the opportunity to present testimony before your Subcommittee on behalf of the Power Authority, EEI, ANEC and APPA on the subject of legislation to aid the domestic uranium mining and milling industry.

I have enclosed the responses to the questions which you submitted to me on that subject over cover letter dated May 16, 1989.

If you have any questions on the responses, or require any additional information on this matter, please give me a call.

Sincerely,

JP Bayne
J. Phillip Bayne

w/enc.

QUESTIONS ON URANIUM MINING

From Senator J. Bennett Johnston

Hearing before the Subcommittee on Energy Research
and Development
Committee on Energy and Natural Resources

For Edison Electric Institute (J. Phillip Bayne)

1. Last Congress, Bill Lee of Duke Power testified that the maintenance of a viable domestic uranium mining industry is in the utilities' interest and in the national interest. Has EEI changed its mind about this?
   - If so, why?
   - If not, don't you agree that something needs to be done to ensure this viability? After all, DOE has found the industry to be non-viable for the past four years.

Answer:

Mr. William S. Lee of Duke Power Company presented testimony to the Subcommittee on Energy Research & Development on March 13, 1987 on behalf of EEI and ANEC. The positions stated at that time still represent the views of the electric utility industry. The specific part of that statement addressing the domestic uranium mining industry is as follows:

"Utilities would like to purchase domestic uranium as long as it is priced competitively. In fact, it is in the long range interest of electricity customers to have the security of an available domestic supply of moderate size in the event it is needed. Domestic uranium reserves probably can be mined on a competitive basis to provide an average of approximately 16 million pounds of U_3O_8 each year beginning in the mid 1990's, at least 30 percent of the requirement for civilian nuclear plants in the U.S. Thus, a significant portion of the domestic uranium requirements and a modest uranium export business are expected to be filled by competitive domestic suppliers in an unconstrained marketplace. An artificial trade barrier that ignores the marketplace and forces the development of premium priced reserves is, therefore, not only undesirable but unnecessary."

EEI continues to support this position. The domestic uranium production industry is supplying a portion of the uranium required for U.S. nuclear energy plants and utilities will continue to purchase domestic uranium when it is competitively priced.

2. If something must be done to ensure viability, what should we be doing, if not what Sen. Domenici proposes?
   - Has the electric utility industry made any proposals to the miners (or to anyone) as alternatives to the legislation you are opposing?
   - What are these proposals? When were they made?

Answer:

The extensive uranium purchase program called for in Amendment 10 to S.83 would impose a very heavy financial burden on electricity customers for several years through a fee on nuclear fuel loaded in all U.S. nuclear energy plants. This extra cost would be over and above the price paid suppliers for the uranium and would be separate from any benefits customers would realize from its use.

The industry believes that proposals that would foster the development of a more orderly uranium market, reduce the excessively large commercial uranium inventories, and encourage the procurement of economic domestic uranium, are desirable. Several discussions on how best to achieve these goals have been held between representatives of the utilities and the domestic uranium producers early in the year and within the last month. One proposal being examined is a voluntary utility purchase program in conjunction with a special program where the proposed corporation would promote the economic overfeeding of the enrichment process. The corporation would oversee and conduct the overfeeding of domestic uranium purchased voluntarily by utilities and credit them with the benefits resulting from savings in power costs.

Such a program should enhance the demand for uranium and assist in the reduction of commercial inventories. When uranium prices are low and electricity prices high, utilities would have an economic incentive to buy more uranium for overfeeding. This would provide support for the domestic uranium industry when it is needed most--when uranium prices are low.

This concept, as well as other issues, are currently under discussion.

3. How much domestic uranium does the U.S. electric utility industry purchase? Provide data for the last five years

and projections for the next five years.

- What is the electric utility industry doing to purchase more domestic uranium?
- Is price the only consideration in uranium purchases? Is security of supply a consideration? How do you balance these considerations?
- Would the utility industry be willing to be totally dependent on foreign uranium? Are some foreign suppliers preferable to others? Explain.

Answer:

The U.S. electric utility industry consumes between 35 and 40 million pounds of uranium each year. Purchases of uranium have been less than consumption for the past several years because utilities have been drawing from the large uranium inventories that were accumulated under take-or-pay contracts. Most of these contracts were made with domestic uranium producers in the late 1970's and early 1980's and required utilities to purchase uranium despite the fact that many nuclear plants were delayed or cancelled. The resulting uranium inventories reached a level of nearly eight years supply at one point and currently stand at about a four year supply. A limited survey of domestic uranium commitments during the last two years was performed by EEI in early 1989. The results of that survey revealed that 18 U.S. utilities had committed to purchase 32 million pounds of domestic uranium during the two year period 1987 and 1988.

We have not compiled the data for actual deliveries of uranium over the previous five year period. However, data published in the Uranium Industry Annual 1987 (DOE/EIA-0478(87)) shows that new contracts were signed by U.S. utilities with domestic suppliers for about 72.5 million pounds of U_3O_8 between 1983 and 1987. This amount does not, of course, include domestic uranium already committed to before that period.

During the next five years, the trend of reducing existing inventories is expected to continue, approaching a normal inventory level--about a two year forward supply. At the present time, future utility uranium requirements are largely unfulfilled. Future delivery commitments for uranium made thus far are predominately for domestic uranium--about 58.9 million pounds of U_3O_8 to be delivered between 1989 and 1993. The purchase of additional uranium will continue and domestic uranium will be purchased when it is available on a competitive basis.

Security of supply, supply diversification, and reliability of the supplier are significant factors when considering the purchase of uranium along with price and other terms and conditions. These factors are balanced through an evaluation that hinges on the circumstances and the judgement of each individual utility. Such factors include the level of inventory held by the utility, whether the supplier is a producer or a trader, and the national origin of the material. All of these factors are considered when making a management decision on each uranium purchase.

Most utilities prefer domestic uranium and will continue to seek such suppliers. However, some utilities may elect to depend on foreign suppliers. The primary foreign suppliers to U.S. utilities are Canada and Australia, friendly nations with very large, high grade uranium ore bodies. From a reliability of supply standpoint, these nations are preferred for a reliability of supply when compared to other foreign suppliers. Further, as mentioned in our testimony on May 11, 1989, Congress reinforced the security and reliability of Canadian exports with the approval of the Free Trade Agreement between the U.S. and Canada.

4. How do you feel about dependence by U.S. utilities on Soviet uranium? How much Soviet uranium did the U.S. utility industry buy last year? In the last five years? - How much Soviet uranium do you expect U.S. utilities to buy in the next five years?

Answer:

Soviet uranium may be available on a limited basis, but reliable information is not available on purchases by U.S. utilities. Utilities are interested in minimizing the cost of electricity for their ratepayers. If the quality is good, the price lower than competitors, and it is delivered on a dependable schedule, then some utilities may chose to purchase Soviet material for a portion of their needs. It is doubtful that U.S. utilities will consider the Soviets as a long term dependable supplier for any significant quantity of their needs.

We do not know the quantity of Soviet uranium, if any, that has been purchased by U.S. utilities in the last year or the last five years. Nor do we have an opinion on how much may be purchased in the next five years. If any Soviet material has indeed been purchased, the quantities are likely very small and not of a magnitude to lead to the supply dependency of any U.S. utilities. It is important to note that of all the uranium that will be imported into the United States by the year 2000, 96% of it will be of either Canadian or Australian origin.

5. Is there any industry policy on security of uranium supply? Should there be such a policy?

Answer:

There is no industry policy on security of uranium supply. Each utility has its own policies and practices in this regard and we believe that it would be inappropriate to have a coordinated overall industry policy, particularly in light of U.S. antitrust laws.

6. Is EEI concerned that failure to resolve these mining issues may keep the uranium enrichment restructuring legislation from enactment in the 101st Congress?
- Would EEI oppose uranium enrichment restructuring legislation if provisions on mining viability are

attached? Any provisions?

- Does the EEI speak with one voice on this matter?
- Describe any significant minority positions on Uranium enrichment restructuring within EEI.

Answer:

The electric utility industry favors the restructuring of the DOE uranium enrichment enterprise into a wholly-owned government corporation with a workable structure that is market-oriented and competitive. We are concerned that failure to resolve the domestic uranium producer issues may prevent such restructuring.

As was stated in the testimony on May 11, 1989:

"...we remain open to reasonable proposals to address uranium industry issues, and we will work with Congress to achieve a fair and equitable legislative package."

However, Amendment 10 of S.83 presents the utility industry and electricity consumers with an excessive cost burden. EEI speaks with one voice on this manner, although, there are some individual utilities that are members of EEI that believe any supplemental support to the domestic uranium producer industry is totally unjustified. There are and always will be different opinions on what constitutes effective restructuring of the enrichment enterprise. Generally, there have been several utilities that have expressed the concern that as the enrichment plan has been gradually modified, it has become less effective and less desirable than earlier versions. This, among other factors, has made support of uranium mining provisions difficult for some utilities.

Currently, the industry is considering the impact of a variety of restructuring issues. Most important of these are how the corporation would be governed, the consequences of future NRC licensing, decommissioning and decontamination issues, pricing practices, and federal tax consequences.

POST HEARING QUESTIONS

From Senator Wendell E. Ford

for EEI/ANEC/Bayne

1. What are the average levels of inventory held by utilities in 1988? What level of inventory is generally considered optimal?

Answer:

At the end of 1988, 129 million pounds of U_3O_8 was held by the utility industry. This is about 84% of the total domestic commercial inventory (about 82% of which is domestic uranium). This translates to an average uranium inventory level of approximately four years of forward supply, and this is gradually being reduced. This inventory varies considerably from utility to utility. Some utilities have succeeded in balancing their purchases with consumption and their inventory is limited to their normal prudent working inventory of about two years. Others have much larger inventories. The level generally considered optimum is about two years of working inventory, all combined in the form of natural uranium, natural and enriched UF_6, and fabricated fuel.

2. **What increase in production do you believe will result from the purchase program contained in Amendment 10?**
   - Do you believe that this increase in production will be sustained after the five year purchase program is completed?
   - Do you believe that this purchase program will contribute further to the boom and bust cycles in the uranium industry?

Answer:

There may be some increase in domestic uranium production under the purchase program contained in Amendment 10 but it would probably be considerably less than the purchased quantity. The program permits uranium to be supplied from inventories, thus, it would not have to be produced. In addition, the uranium currently scheduled to be produced to fill existing contracts in some cases may be reallocated to the purchase program and alternative material provided for the existing contracts.

As inventories are worked down to a normal level, production and consumption should become balanced. Under that situation, prices should firm and the increased production may be competitive in a continuing basis. However, producers may be encouraged to use marginal reserves to produce uranium for the purchase program. If prices do not firm up within five years or if prices decline after the term of the program, then the marginal reserve production will not be sustained. Under that scenario, the purchase program will contribute to another boom and bust cycle for the uranium supply industry.

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June 12, 1989

The Honorable Wendell Ford
Chairman
Subcommittee on Energy Research and Development
312 Hart Senate Office Building
Washington, D.C. 20510

Dear Mr. Chairman:

In response to your request, enclosed are UPA's responses to the questions submitted by you and Senator Johnston after our testimony in May. I apologize for our delay in forwarding these answers to the Committee.

UPA is grateful for your continuing interest in the problems of the uranium industry.

Sincerely,

Grenville Garside

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ANSWERS TO POST HEARING QUESTIONS FROM SENATOR WENDELL H. FORD

1. How large are U.S. producer's inventories? Do they contain solely domestic uranium?

   - Some have suggested the that federal purchase program in Amendment 10 would only allow you to draw down your inventories but would not result in increased domestic production. Please comment on that statement.

ANSWER: U.S. producer inventories are estimated to be approximately 5 million pounds U_3O_8. With the exception of approximately one million pounds, they are solely domestic uranium. The purchase program proposed in Amendment 10 would allow producer inventories to be sold, but only to the extent that title to the inventories has not been previously transferred. Thus, producers who have been maintaining their operations in spite of the depressed market would have an ability to sell their limited inventories. Revenues generated from such sales would, in all probability, be used to satisfy obligations related to the creation of the inventories or be used to reinvest in production facilities. It should be noted, however, that the extent of possible inventory sales is only a small percentage of the total uranium to be purchased under the purchase program. Rather than view the inventory issue negatively, the proposal consciously allowed for inventory sales in order to generate capital for reinvestment in the industry.

2. Specifically, how much will Amendment 10 increase domestic mining production? How will it help to keep producers in business for the long-term?

ANSWER: It is estimated that Amendment 10 would increase domestic mining production by approximately 6 million pounds per year, which is equivalent to a 50 percent increase over existing production. The five year purchase program would help to maintain the industry until excess utility inventories have been absorbed and normal laws of supply and demand allow prices to be based upon production costs rather than inventory liquidation. According to the Uranium Institute, a London-based association made up of utilities and producers worldwide, excess inventories should be absorbed not later than 1995, since uranium demand began to exceed production in 1985. The purchase program contained in Amendment 10 is designed to bridge the period during which excess inventories will continue to plague the market.

3. How many miners do you expect will be put back to work by this proposal? For how long? On what evidence do you base your conclusions? How does this compare with projections of employment made by the Energy Information Administration in the 1987 Domestic Uranium Mining and Milling Industry Viability Assessment (DOE/EIA-0477(87))? What might explain any differences?

ANSWER: The proposed purchase program and other provisions of Amendment 10 are intended to prevent further erosion of the tremendous investments made in this country's uranium mines and mills and to allow some of these facilities to be restarted or maintained rather than abandoned and decommissioned. Thus, Amendment 10 addresses national security much more than employment concerns. Obviously, the industry cannot recapture the 20,000 jobs lost since 1979 without becoming inefficient. Producers remaining in the business have made great strides to become more competitive. For example, the industry is able to produce 13 million pounds per year with 2,000 employees, while it took 22,000 employees to produce 40 million pounds per year in 1979. The industry expects to maintain a high level of efficiency in producing the additional 6 million pounds annually under the purchase program. Thus, it is estimated that there will be an additional two to four thousand jobs associated with the production required to satisfy the purchase program. Since the industry, producing approximately 20 million pounds per year, expects that it can compete in the world market at the conclusion of the purchase program, the increase in employment should be permanent.

The Energy Information Administration projects total employment to be approximately 2,500 by the end of the 1990s; however, this is based upon "current" market conditions and a prediction that domestic production will drop to 7.6 million pounds by 1992 and remain below 10 million pounds until 1996. The purchase program proposed in Amendment 10 would keep the level of production at approximately 20 million pounds per year through 1994, and, because supply and demand parity will be achieved in the interim, similar production levels will continue beyond that date. To sustain such production will require at least twice the employees estimated by EIA.

4. The tax on utility use of uranium contained in Amendment 10 resulted in a "blue slip" from the House of Representatives last year. This means that, in their view, the Senate interfered with the House's right to initiate revenue raising legislation. Amendment 10 is likely to meet the same fate in this Congress. Do you have any other proposals for revitalizing the industry that would not be viewed as taxes?

ANSWER: The uranium producers do have proposals that would avoid the "blue slip" problem in the House of Representatives. These proposals have been made to representatives of the utility industry and are believed to achieve approximately the same result as the approach taken in Amendment 10.

5. It has been argued that the uranium industry has undergone cycles of boom and bust throughout its history. In recent years, demand for uranium exceeds supply. It is expected that in the future, supply and demand will come into balance and those producers who are economic will stay in business. What justifications can you provide for subsidizing the industry in the next few years? Won't that only interfere with the normal supply/demand balance in the market and push the time for reaching that balance further into the future?

ANSWER: According to the London-based Uranium Institute, demand for uranium exceeded supply for the first time beginning in 1985. The Institute predicts that excess inventories will be absorbed not later than 1995. Thus, Amendment 10 provides the bridge for U.S. producers capable of competing in the world market to the time when prices will be dictated by production costs and not inventory liquidation. Failure to provide assistance to the industry will result in the complete loss of mines and mills that, but for prior government policies which helped create the excess inventories, would rank among the most efficient in the world.

6. Are you aware of any other countries whose export policies dictate a floor price for the sale of uranium? To your knowledge, are any countries with such an export policy selling uranium under long-term contracts below the floor price? If so, how can that be?

ANSWER: Both Australia and Canada have floor price policies. In the case of Australia, uranium must be sold for not less than $30 per pound over the life of the contract. Even with this restraint, Australia has been successful in marketing several major projects to European and Japanese utilities who take a longer term view of the market and the need for diversity and reliability of supply. The Australian floor price policy is currently undergoing review by the Australian government.

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ANSWERS TO POST HEARING QUESTIONS FROM SENATOR J. BENNETT JOHNSTON

1. The legislation before us (Amendment 10) received a blue slip from the House in the last Congress. What point is there in attempting to pass this particular legislation in the Senate in this Congress?

ANSWER: The uranium producers do have proposals that would avoid the "blue slip" problem in the House of Representatives. These proposals have been made to representatives of the utility industry and are believed to achieve approximately the same result as the approach taken in Amendment 10.

2. Amendment 10 has a uranium purchase program of $750 million over 5 years. Most of this money would come from electric utility ratepayers. There are 2,000 to 3,000 miners out there. So these ratepayers would be paying $50,000 to $75,000 per miner per year. Don't you think this kind of arithmetic will make you vulnerable to attack on the Senate floor by Members whose constituents will be paying for this program?

ANSWER: The $750 million to be expended for the purchase program over five years enables the Deparment of Energy to acquire uranium, not for unnecessary stockpiling, but rather for use. In using the purchased uranium the DOE would save almost $400 million in power costs. Thus, the net cost of the purchase program is expected to be approximately $350 million over the five years. The 2,000-3,000 additional jobs created, making total employment approximately 5,000, means the per miner per year expenditure would be approximately $12,000. Since the cost of uranium fuel is about 3% of the total cost of electricity to the consumer, the added cost of the purchase program to ratepayers would be miniscule. It is doubtful that these ratepayers would even see the difference in the cost of their electricity. The relatively small cost of the program would be well spent if the nation's investment in its uranium mines, mills and jobs can be preserved until the effects of past government policies, which have led to the devastation of the industry, can be overcome.

3. It has been said that this purchase program will only result in the sale by a very few companies of uranium that is already in inventory. So no miners will benefit, only mining companies. How do you respond to this charge?

    - Provide the Subcommittee with an analysis of the inventories of the companies that are eligible under the purchase program, your projections of mining activity that the program will stimulate, and your estimate of how the sales are likely to be distributed among mining companies.

ANSWER: U.S. producer inventories are estimated to be approximately 5 million pounds U_3O_8. With the exception of approximately one million pounds, they are solely domestic uranium. The purchase program proposed in Amendment 10 would allow producer inventories to be sold, but only to the extent that title to the inventories has not been previously transferred. Thus, producers who have been maintaining their operations in spite of the depressed market would have an ability to sell their limited inventories. Revenues generated from such sales would, in all probability, be used to satisfy obligations related to the creation of the inventories or be used to reinvest in production facilities. It should be noted, however, that the extent of possible inventory sales is only a small percentage of the total uranium to be purchased under the purchase program. Rather than view the inventory issue negatively, the proposal consciously allowed for inventory sales in order to generate capital for reinvestment in the industry.

The inventories of the companies that would be eligible under the purchase program, and projections of mining activity that the program will stimulate, will be provided to the Committee separately to preserve confidentiality.

It is expected that purchase program will be distributed ratably among all current producers including, conventional underground, in situ and by-product producers. Almost all have excess capacity. The purchase program will also encourage previously shut-down operations to restart to the extent that they are able to compete. Included among this category is a mine and mill complex owned by the Spokane Indian Tribe, which could help overcome the 65% unemployment rate on the reservation. Since the legislation calls for a 1,000,000 pound per year cap on uranium sales by any one company, there is assurance that no company will be the sole beneficiary of the purchase program and that the entire industry will benefit.

4. It has been said that this purchase program will benefit only a very few companies, many of whom are subsidiaries of Fortune 500 companies or foreign governments. How do you respond to this?

   - Provide the Subcommittee with a list showing the ownership of companies that would be eligible under the purchase program.

ANSWER: The uranium industry is comprised of companies occupying the spectrum of ownership from privately held companies to divisions of Fortune 500 companies and foreign owned corporations. Below is a list of the ownership of companies considered eligible under the proposed purchase program.

Company Ownership

Atlas Minerals	Atlas Corporation (U.S.)
Energy Fuels Nuclear	Privately Held (U.S.)
Everest Minerals Corporation	Privately Held (U.S.)
Uranium Resources, Inc.	(U.S.)
Homestake Mining Company	(U.S.)
Chevron Resources Company	Chevron Corporation (U.S.)
Albuquerque Uranium Corporation	Privately Held (U.S.)
Freeport Uranium Recovery Company	Freeport McMoRan (U.S.)
IMC Fertilizer Group, Inc.	(U.S.)
Rio Algom Mining Corporation	Rio Algom Ltd. (Foreign)
Pathfinder Mines Corporation	COGEMA, Inc. and Subsidiaries (Foreign)
Umetco Minerals Corporation	Union Carbide Corporation (U.S.)
Tribal Mining and Milling Department, Inc.	Spokane Indian Tribe (U.S.)
U.S. Energy Corp.	(U.S.)
Uranerz U.S.A., Inc.	Uranerzbergbau-GmbH and Company (Foreign)
Malapai Resources Company	AZP Group, Inc. (U.S.)
Union Pacific Resources Company	Union Pacific Corporation (U.S.)
Total Minerals Corporation	Total Energy Resources, Inc. (Foreign)
Cotter Corporation	Commonwealth Edison (U.S.)

5. It has been said that the inventories of uranium now in existence will be worked off in a very few years, and the domestic industry will obtain enough sales to survive in reasonable shape until demand picks up. How do you respond to this assertion?

   - Are you saying that there will be no domestic industry five years from now without the purchase program?

ANSWER: As stated in our response to Question #3, excess inventories are expected to be absorbed no later than 1995. Until such time, it will be impossible for even the most efficient companies to maintain their mines and mills since uranium prices will not reflect production costs. Thus, the nation will continue to lose its uranium resources through mine abandonment and mill decommissioning. Although in five years there will be a limited industry, it will not be adequate to service the nation's defense needs in the long term or be capable of responding to supply disruptions.

6. EEI claims that U.S. utilities are purchasing domestic uranium (according to Mr. Bayne's testimony, 32 million pounds in 1987-88). What is the impact of these purchases on your analysis of the industry's prospects?

   - How much would the utilities' current uranium purchase patterns have to change to satisfy your concept of viability for the domestic industry? A lot? A little?

ANSWER: The 32 million pounds purchased by U.S. utilities from domestic uranium companies referred to in Mr. Bayne's testimony are pounds sold under long term contract using spot market pricing. The contracts are generally of five to ten years in duration. Thus, the annual quantities for delivery to U.S.

utilities would be between three and six million pounds per year. Since the deliveries under contracts generally do not start for two or three years, they will add little to current production levels because existing contracts held by U.S. producers will lapse as the new contracts come into effect.

Contracts with spot market pricing do very little to assist the industry since it is impossible to predict whether the price will be $5 per pound or $30 per pound at the time of delivery. Without predictable pricing, the industry finds it impossible to invest in new mines and mills or even the refurbishment of mines and mills to satisfy future demand. With current prices less than $10 per pound, no U.S. producer -- much less any producer in the world -- is able to demonstrate a return, much less cover costs. Thus, contracts entered into by U.S. utilities, even if the quantity is 32 million pounds, will do little for the U.S. industry over the next five years while excess inventories continue to depress spot market prices.

7. If legislation does require uranium purchases by utilities or by the proposed uranium enrichment corporation, wouldn't that result in increased uranium inventories domestically, which is one of the important causes of the slump in domestic sales?

   - How does shifting the ownership of the present inventory surplus from miners to utilities or to the Corporation solve the problem of low domestic sales?

ANSWER: One of the attractions about the proposed purchase program is that the uranium can be used by the DOE in its enrichment operations to save electricity and thus reduce costs. For this reason, the proposed purchase program will not result in additional inventories which will later affect the market. Uranium is one of the few commodities where a purchase program by the enrichment corporation or by the utilities will actually work and not simply create another inventory transfer from the private to the public sector.

8. What alternatives to the present legislation have the miners looked at?

   - What alternatives have you presented to the utilities?
   - When did these presentations occur?
   - Describe these alternatives and the utilities' reaction to each.

ANSWER: Over the past two years, the uranium miners have looked at numerous alternatives to restore viability to the industry. The first alternative, of course, was to use existing law under Section 161(v) of the Atomic Energy Act. DOE refused to fulfill its responsibilities under this section by imposing enrichment limitations, under the self-serving assumption that they would not work. When the Supreme Court of the United States directed the District Court to make its own determination concerning the efficacy of Section 161(v), the miners believed that relief was in sight. However, the Reagan Administration and the Congress denied this remedy when the exemption for Canadian uranium was created, thus making it impossible for the miners to demonstrate the effectiveness of enrichment limitations under Section 161(v).

The Canadian Free Trade Agreement also made it impossible to limit imports, even though many of these imports come from countries which have historically subsidized production. The issue of subsidies was not addressed as part of the Canadian Trade Agreement but it was expressly recognized as a problem and promises were made by trade negotiators to deal with it. Thus far, the subsidies have not been overcome and the U.S. uranium industry continues to compete against the uranium support policies of other countries.

Given the constraints of U.S. trade policy and U.S. tax policy, the Reagan Administration suggested the Amendment 10 purchase program as the means by which the U.S. uranium industry could be assisted without violating either of these policies. The purchase program remains the best alternative for restoring viability. Since the purchased uranium can, in fact, be used, there will be little new cost to the government (see Mr. Sewell's response to the questions of Senator Ford at the May 11, 1989 hearing).

Recognizing that other alternatives need to be explored as well, the producers met with the utilities several times over the last several months, but serious discussions did not begin until May 8, 1989. At this meeting the producers suggested three alternatives which were not necessarily exclusive. One focussed on some form of purchase program by the Corporation. Another involved the creation of a utility buying organization which would buy up to 30% of its requirements from U.S. producers under predictably priced long term contracts. These contracts would have base or floor prices established by competitive bidding. Such a utility buying organization would require authorizing legislation from the Congress and a limited exemption from U.S. anti-trust laws. Nevertheless, it would allow utilities to acquire U.S. origin uranium and use it or hold it for future use. The utilities were interested in the proposal but raised questions concerning the attitude and oversight of the public utility commissions as well as the ability of the utilities to agree among themselves on such a solution.

A third solution involve a mandatory inventory policy for purposes of national security. Under this proposal, U.S. utilities would be required to maintain not less than a two-year inventory of uranium, not including uranium in the process of enrichment or for the first fuel core of a reactor. To the extent the utility did not already have a two-year inventory, it would be required to purchase the needed uranium from U.S. producers. U.S. utilities operate with less than a two-year inventory on average and the producers' proposal would freeze existing inventory and accelerate the day when production costs better dictate uranium prices.

APPENDIX II

Additional Material Submitted for the Record

NATIONAL TAXPAYERS UNION
A NONPARTISAN, NONPROFIT ORGANIZATION DEDICATED TO THE PUBLIC INTEREST
325 PENNSYLVANIA AVENUE, SOUTHEAST WASHINGTON, DISTRICT OF COLUMBIA 20003 TELEPHONE AREA CODE (202) 543-1300

89 MAY 12 PM 8 16

8 May 1989

The Honorable J. Bennett Johnston,
Chairman
Energy & Natural Resources Committee
The Honorable Wendell Ford,
Chairman
Energy Research & Development Subcommittee
United States Senate
Washington, D.C. 20510

Re: Amendment No. 10 to S. 83, 101st Congress, 1st Sess.; hearing scheduled for 11 May 1989--domestic uranium industry subsidies in nuclear fuel bill

Gentlemen:

This letter is to express the views of the National Taxpayers Union (NTU) with respect to Amendment No. 10 to S.83, concerning which a hearing is currently scheduled for 11 May. This letter is for inclusion in the record of the hearing.

Overview. Amendment No. 10 is designed for incorporation with Amendment No. 6 into legislation closely resembling S. 2097 of the 100th Congress. NTU vigorously and successfully opposed S. 2097. NTU remains opposed to legislation resembling S. 2097 on the ground that it will not solve but instead will complicate the problems of the U.S. nuclear fuel industry, and on the additional ground that such legislation will increase -- rather than reduce -- the amount of unnecessary taxpayer subsidization flowing to that industry with no commensurate public benefit.

Background of Amendment No. 10. Amendment No. 10 sets up two major new subsidy programs for the U.S. uranium industry. The first program involves the purchase of $ 750 million in U.S. origin uranium by the U.S. government (§ 215) at prices projected in the $ 25/lb. range. The current spot market price for uranium ($ 11 to $ 12) is approximately one-half that amount. The U.S. government currently sits on an ample stockpile of uranium, and, through the Department of Energy (DOE), has been distributing that uranium booking a price of approximately $ 9 per pound. According to testimony last Congress, proponents of the "S. 2097" approach envision financing at least part of the $ 750 million uranium buy (at above-market prices) through distribution of the current U.S. stockpile (at below market prices). So far as we can tell, Amendment No. 10 is similarly based, and thus envisions U.S. uranium distributions at below-market prices ($ 9 per pound) and U.S. purchases at above-market prices (about $ 25 per pound). Although complicated arguments have been tendered to the effect that this is not costing the taxpayers, the whole operation must be seen for what it is: a massive subsidy based on manipulation of taxpayer assets. NTU estimates the total cost of this manipulation to the general taxpayer at approximately $ 1 billion.

The second subsidy program envisions a tax on nuclear utilities raising approximately $ 1 billion (§ 212(d)), plus a "contribution" from a federal agency of approximately $ 360 million. See § 212(c). The bulk of this money would be transferred to private uranium companies to subsidize the shut down and decommissioning of uranium mills and remedial action at uranium mill tailings piles.[1] Both the utility industry and the U.S. government have successfully denied any general legal obligation to so subsidize decommissioning of the uranium facilities in the past.

Basic objections to Amendment No. 10. In addition to the objections to Amendment No. 10 apparent upon a description of the proposed legislation, NTU notes the following basic objections:

a. The professed intention of the sponsors of the amendment is to "revitalize" the domestic uranium industry. Neither of the subsidy programs in the amendment accomplish this intent. First, the uranium purchase program will benefit primarily efficient producers with high grade ore or very low cost operations who can successfully compete anyway. It will not put any substantial number of uranium miners back to work. It will simply feather the nests of existing profit-making entities. This much is attested by testimony offered in the last Congress.[2] Second, subsidizing decommissioning the industry is inconsistent with revitalizing the industry. It is consistent with encouraging the industry to shut down because it lessens the cost of shut down to industry participants.

b. The temporary creation of an "artificial" demand will not revitalize the industry. Canada has substantial high grade, low-cost reserves. Through the Free Trade Compact, the U.S. and Canada have agreed to free trade in uranium. Substantial Canadian uranium is available now, and will be available after the proposed buy program. In addition, further low-cost supplies are available from another close ally and trading partner, Australia. The U.S. government purchase program will thus not serve the purpose of "tiding over" the domestic industry until uranium shortages occur moving the market price up so that more U.S. deposits are competitive, or demand is significantly greater. According to DOE information, the U.S. government currently enjoys a stockpile of uranium in excess of 72 million of KgU (about 150 million pounds) of uranium natural. This material was accumulated largely due to the last purchase program (which expired almost two decades ago). The amount currently on hand is sufficient to cover all U.S. needs for five years. No public purpose is served by another redundant buy program.

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[1] Some of the money raised by the tax on the utilities would evidently be employed to purchase domestic origin uranium.

[2] E.g., Testimony of Mr. Edward R. Farley (Atlas Corp.) in Uranium Enrichment and Mill Tailings Reclamation Legislation, Hearing before the House Ways & Means Comm., 100th Cong., 2d Sess. at 108 (August 10, 1988).

c. DOE is responsible for decommissioning and remedial action at the three federal gaseous diffusion uranium enrichment plants. Under section 161v. of the Atomic Energy Act, DOE is obligated to recover all the costs associated with providing civilian enrichment services, and decommission and remedial action are an admitted cost. To date, however, DOE has recovered no funds from civilian nuclear utilities to offset the decommissioning liabilities. According to DOE documents, decommissioning and remedial action could cost $ 4 billion to $ 6 billion.[3] Before U.S. utilities are taxed to pay for decommissioning costs of private uranium companies (many of which are now foreign-owned), costs for decommissioning the federal uranium enrichment plants should first be recovered.

d. Amendment No. 10 envisions indirect taxpayer subsidies by encumbering the federal government entity supplying enrichment with various obligations to purchase unneeded domestic origin uranium or to pay for private uranium company decommissioning costs. The federal government entity supplying uranium enrichment should be set up as a corporation whose purpose is to maximize the value of the uranium enrichment program and its assets to the U.S. taxpayer. The enrichment program has already amassed, according to the General Accounting Office, more than $ 8.8 billion in "unrecovered" costs as of two years' ago. This is a measure of the taxpayer subsidy to the program to date. The program should now be reorganized to minimize this loss, to recover costs and to serve the taxpayer. Encumbering the program with further obligations to subsidize elements of the nuclear fuel industry is, quite simply, special interest legislation run rampant, and will only lead to yet further taxpayer subsidies and losses with no commensurate public benefit.

e. Amendment No. 10 creates an unspecified and unlimited liability for taxpayers to subsidize decommissioning of thorium sites. See § 225. No basis has been established for this provision, nor has the magnitude of taxpayer exposure, which may be very substantial, been described.

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[3] DOE, Environment, Safety, and Health Needs of the U.S. Department of Energy: Volume 2: Site Summaries (DOE EH-0079) 205, 210, & 66 (1988) (Paducah facility -- $ 616 to $ 843 million, excluding decommissioning; Portsmouth facility -- $ 794 to $ 1,190 million, excluding decommissioning; Oak Ridge facility -- $ 2,470 to $ 3,650 million, including decommissioning).

f. Amendment No. 10 on its face limits financial liability of uranium site owners and operators to that arising under the Uranium Mill Tailings Radiation Control Act. See, e.g., § 227. In other words, it appears to protect site owners and operators from financial liability for compliance with the Clean Air Act, Safe Drinking Water Act, and other federal and state requirements applicable to such sites. NTU is concerned that this may lead to demands that the general federal taxpayer pay costs to comply with more stringent requirements at such sites imposed under such laws. This is another very substantial and unlimited liability which the proposed Amendment would impose on taxpayers. By complicating the issue of remedial action financial responsibility, the provision will also likely contribute to hazardous conditions and a slow down in at least some remedial action activities in the states where the facilities are located, primarily New Mexico, Utah, Colorado, Washington, Wyoming and Texas. In short, the proposal cannot be vindicated on the basis of a health and safety rationale.

Conclusion. NTU would be compelled to oppose vigorously any legislative package incorporating Amendment No. 10 or anything resembling the same. The proposal would impose approximately $ 1 billion or more in additional liabilities upon general federal taxpayers through raids on the federal uranium stockpile, diversion of $ 360 million to private uranium companies, unlimited liability to thorium site owners, and possible federalization of financial responsibility for much of the remedial action connected with uranium sites. Further, the proposal would impose $1 billion in new taxes on nuclear utilities to finance transfer payments to foreign and domestic uranium companies. Rather than new taxes on nuclear utilities to transfer wealth to uranium producers, Congress should assure that DOE enrichment customers pay their share of the clean-up of the three federal uranium enrichment plants. After all, under existing law they should have charged for these expenses but were not.

Sincerely,

Jill Lancelot

Jill Lancelot,
Director, Congressional Affairs

cc. Members of the Committee

May 17, 1989

STATEMENT FOR THE RECORD

Kerr-McGee Chemical Corporation ("Kerr-McGee") appreciates the opportunity to submit this statement for the record concerning Amendment No. 10 to S. 83. The amendment is designed to foster the revitalization of the Nation's uranium industry through a program to purchase domestic uranium and through partial funding of the reclamation of the uranium mill tailings at domestic uranium sites. Kerr-McGee endorses the amendment enthusiastically. This statement, however, will focus on Section 225, which authorizes the reimbursement of certain expenses related to remedial activities at active thorium sites. We focus on this section because of the particular significance of Section 225 to Kerr-McGee.

As a result of a merger with American Potash and Chemical Company in 1967, Kerr-McGee became the owner of the West Chicago Rare Earths Facility, a mill that had been established in the 1930s in West Chicago, Illinois, to process ore to recover thorium and rare earth compounds. Although thorium was originally recovered at the facility for commercial purposes, including principally for use in producing mantles for gas lamps, much of the production in the later years was pursuant to Government contracts. Thorium, like uranium, can sustain a nuclear chain reaction, and commencing with the program of the Manhattan Engineering District during World War II, the Government acquired an extensive stockpile of thorium for possible national security uses.

The production of thorium, like the production of uranium, entails the generation of significant volumes of wastes (tailings). These tailings must now be disposed of in a fashion that conforms to the requirements of the Uranium Mill Tailings Radiation Control Act of 1978 ("UMTRCA") and the various regulations that have been promulgated pursuant to that statute. Proper disposal involves the stabilization of the tailings in a disposal cell that will isolate the tailings from the environment for the indefinite future.

Section 225 of the amendment authorizes reimbursement by the United States of a portion of the costs of reclamation of thorium tailings resulting from sale to the U.S. Government of thorium. Government reimbursement is justified by the fact that most of the tailings at the site were generated pursuant to Government contracts under circumstances in which the Government agreed to provide compensation for the costs of production.

The allocation of remedial costs is to be determined by the ratio of the volume of tailings that were generated as an incident of sales to the United States to the total volume of tailings at the site. The section thus provides for the United States to pay only those remediation costs that are fairly attributable to activities that were undertaken for the Government's benefit.

The National Taxpayers Union has argued that this section would allow unjustified compensation of remediation costs. In point of fact, however, the legislation serves only to allow the Government to fulfill its part of the bargain. Legislation is needed because the remediation expenses first arose years after the deliveries to the Government as a result of the enactment of UMTRCA.

The National Taxpayers Union has also suggested that the section provides for potentially unspecified and unlimited federal assistance in the cleanup of the West Chicago site. Again, this argument is incorrect. Section 225 serves only as an authorization for appropriations. Any specific recovery of costs is governed by the allocation formula set out in the section and will be subject to Congressional consideration at the time that funds are appropriated.

In any event, the costs of remediation are not properly characterized as unlimited. Kerr-McGee has spent approximately $37 million in preparing for stabilization and the U.S. Nuclear Regulatory Commission ("NRC") has recently concluded that the completion of onsite stabilization pursuant to Kerr-McGee's proposal will cost approximately $19 million. (The costs of offsite disposal are considerably more expensive, chiefly because of the costs of transportation of the tailings.) Of course, only that portion of the costs that are properly attributable to the Government will be recovered.

In sum, the section sets out a sensible and fair mechanism by which the Government will pay its fair share of the costs of remediation.

URANIUM PRODUCERS OF AMERICA
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March 29, 1989

Mr. Brad I. Botwin, Director
Strategic Analysis Division
Office of Industrial Resource Administration
Bureau of Export Administration
U.S. Department of Commerce
Room H3878
Washington, D.C. 20230

Re: National Security Investigation of Imports of Uranium

Dear Mr. Botwin:

Enclosed with this letter are the comments of the Uranium Producers of America, an association of domestic uranium mining and milling companies. The comments are filed in response to the notice published in the Federal Register on Monday, February 27, 1989. Following your review of the comments, we would be pleased to provide whatever additional information would be helpful to your investigation.

The domestic uranium industry has been declared non-viable by the Secretary of Energy for four consecutive years, the last being calendar year 1987. Since the plight of the industry continues to worsen, it is likely that the industry will be declared non-viable for calendar year 1988 as well. The industry's problems stem not from a lack of demand for uranium, but rather from damaging governmental policies, the importation of subsidized foreign uranium, and the marketing of heavily discounted Eastern Bloc production. The combination of these events has driven the market value of uranium from in excess of $40 to the current price of $11 per pound. In constant dollars, this is the lowest value for uranium since the creation of the industry. Moreover, the current value is below the average production costs for western world suppliers, and is only slightly above the estimated forward production costs of the world's lowest cost suppliers. Thus, without timely U.S. governmental intervention, it is likely that the U.S. industry will continue to deteriorate to the detriment of the national security.

Prior to the collapse of the industry in 1980, U.S. production was approximately 43 million pounds U308 per year. The U.S. industry, in reliance upon Congressional promises of continued viability, invested in excess of $3 billion in mines and mills. However, the demand for uranium was dictated not so much by the needs of the commercial utilities, but by the contracting policies of the United States Department of Energy. The DOE required utility enrichment customers to deliver uranium irrespective of actual needs. Thus, as commercial nuclear power plants were delayed or canceled due to licensing requirements, litigation, or changing expectations for electrical growth, the utility still had to procure and deliver uranium under DOE enrichment contracts.

The optimistic expectations for nuclear power which existed in the 1970s also caused foreign governments to encourage exploration for and the development of uranium deposits in their own countries, and uranium from these projects began to enter the market in the late 1970s and early 1980s. Concurrently, with the arrival of new foreign production, DOE changed its enrichment contract and released large quantities of unneeded uranium into the marketplace. Liquidation of these excess inventories and the new foreign production caused the market to collapse from $43 per pound in 1980 to approximately $17 per pound by 1982. The market has not recovered since and, in fact, has deteriorated further.

Recognizing that foreign uranium imports were a direct cause of the industry's collapse, U.S. producers sought to have DOE invoke the provisions of section 161(v) of the Atomic Energy Act. In essence, this provision requires DOE to limit the enrichment of foreign origin uranium to the extent necessary to assure the viability of the U.S. industry. However, because DOE was concerned about its own economic wellbeing, it refused to impose enrichment limitations. The producers sought to compel DOE to act through litigation and, in a 1988 decision, the Supreme Court directed the district court to determine whether or not the industry's viability could be assured through the imposition of enrichment limitations. If so, DOE had no recourse but to implement enrichment limitations under section 161(v).

Letter to Mr. Brad I. Botwin
U.S. Department of Commerce
March 29, 1989
Page Three

Prior to scheduling a hearing before the district court, however, the U.S. government entered into the Canadian Free Trade Agreement. Section 9 of this Agreement exempted Canadian origin uranium from any enrichment limitations imposed under section 161(v). Because of the volume of Canadian imports, this exemption made it impossible for the producers to prevail in their action. Thus, not only had the industry collapsed, but its substantial investment in attempting to force DOE to live up to its statutory obligations was lost. The Canadian exemption was agreed to, even though our negotiators understood that Canadian uranium production, like other natural resource projects in Canada, was heavily subsidized by the federal and provincial governments. In fact, a majority of Canadian uranium production is controlled by the federal and provincial governments. Our trade negotiators chose not to tackle the subsidy issue as part of the trade agreement negotiations, but left this issue for further study and negotiation. This, of course, did not help the U.S. industry solve its immediate problems.

Just as the industry had resigned itself to competing against subsidized Canadian uranium, production from non-market countries became available at prices substantially below prevailing prices. Reportedly, the Soviet Union and the Chinese are selling uranium at substantial discounts in order to capture a share of the Western markets. Their aggressive pricing policies have led to the accelerated decline in the market price experienced over the past several months.

Production levels for the U.S. industry in 1988 are estimated to be approximately 13.5 million pounds. If the devastating impact of foreign uranium sales continues, it is likely that U.S. production levels will decline to an estimated 7 to 9 million pounds per year. At this level, most of the country's uranium mills will be decommissioned and the mines reclaimed. Only 4 of the nations' 26 mills are now operating, and all but 5 underground mines have been shut down. At one time, there were approximately 350 mines operating in this country.

The United States uses approximately 40 million pounds of uranium per year to produce commercial nuclear power. The military uses a much smaller amount and there exists a 50 million pound stockpile for defense purposes. While this stockpile is estimated to be sufficient for 10 to 20 years of military needs, there will be a time when additional U.S. production is required. Since mining projects typically require a minimum of 10 years to develop, it is unlikely that the U.S. will be equipped to deal with its pure defense needs. Our other major suppliers, Canada and Australia, refuse to provide material for such defense purposes as the needs of the nuclear navy (aircraft carriers and submarines). On the commercial power side, the government stockpile of 40 million pounds U308 is rapidly being used to reduce enrichment costs. It is estimated that by 1990, most of commercial stockpile will be consumed. The country will then have no ability to respond to major supply disruptions.

The combination of existing inventories and subsidized foreign production is the principal source of market weakness. In 1980, at the time of the industry's collapse, there existed an eight-year forward inventory. All but three years of this has been consumed. It is estimated that within five years inventory levels will be reduced to the customary one to two years and normal laws of supply and demand will once again operate to set prices. By then the effects of subsidized foreign production should be diminished as well. It is this five-year period, then, that the industry must somehow survive.

Congress has repeatedly recognized the importance of a viable domestic production industry. Section 161(v) of the Atomic Energy Act was passed to assure viability, and as late as 1987 the Senate Energy Committee reaffirmed that "Congress has considered a viable domestic uranium industry as vital to the U.S. national defense and security." It went on to state that "while dependency on other nations for strategic minerals generally, and for uranium in particular, may bring some short-term economic gain, it also involves long-term economic and energy security risks to the nation's common defense and security."

Letter to Brad I. Botwin
U.S. Department of Commerce
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Page Five

There are several options available to assist the industry to survive this period of excess inventory, none of which seem too expensive. However, after eight years of struggle, it is imperative that some action be taken immediately if the U.S. is to maintain production capability and avoid the loss of the tremendous investments made in mines and mills.

Very best regards.

Sincerely,

Gerald W. Grandey

Gerald W. Grandey
President

Enclosure

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March 29, 1989

Mr. Brad I. Botwin, Director
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Very best regards.

Sincerely,

Gerald W. Grandey

Gerald W. Grandey
President

Enclosure

DEPARTMENT OF COMMERCE

INVESTIGATION OF URANIUM IMPORTS

MEMORANDUM SUBMITTED BY

THE URANIUM PRODUCERS OF AMERICA

March 29, 1989

TABLE OF CONTENTS

Page

1.0 STRATEGIC SIGNIFICANCE OF URANIUM........................ 1

2.0 OVERVIEW - INTERNATIONAL URANIUM MARKET.................. 4

2.1 URANIUM PRODUCTION TRENDS............................... 4

2.2 URANIUM SUPPLY INDUSTRY CONCENTRATION.................... 7

2.3 URANIUM CONTRACTING TRENDS............................. 9

3.0 CURRENT STATUS OF THE DOMESTIC URANIUM INDUSTRY.......... 12

4.0 FACTORS CONTRIBUTING TO THE DEPRESSED STATE OF THE URANIUM INDUSTRY.. 17

4.1 U.S. GOVERNMENT ENRICHMENT POLICIES..................... 19

4.2 URANIUM IMPORTS - HISTORY AND POTENTIAL................. 24

5.0 SIGNIFICANT FOREIGN URANIUM PRODUCTION REGIONS........... 30

5.1 AUSTRALIAN URANIUM INDUSTRY............................. 31

5.1.1 Australian Uranium Production........................ 31

5.1.2 Australian Uranium Development and Export Policies..... 33

5.1.3 Marketing/Sales Strategies - Australian Uranium Producers... 35

5.2 CANADIAN URANIUM INDUSTRY............................... 37

5.2.1 Canadian Uranium Production.......................... 38

5.2.2 Canadian Uranium Development and Export Policies....... 46

5.2.3 Provincial and Federal Government Involvement in Uranium Development.............................. 48

5.2.4 Marketing/Sales Strategies - Canadian Uranium Producers... 48

5.3 IMPACT OF CHINESE AND RUSSIAN URANIUM IMPORTS............ 53

5.3.1 People's Republic of China............................ 53

TABLE OF CONTENTS

Page

5.3.2 The Soviet Union.. 56

6.0 OUTLOOK FOR THE U.S. URANIUM INDUSTRY.................... 58

6.1 URANIUM PRICE LEVELS...................................... 58

6.2 U.S. URANIUM PRODUCTION TRENDS........................... 59

6.3 FINANCIAL CAPABILITY...................................... 61

6.4 ALTERNATIVES AVAILABLE TO ASSIST INDUSTRY................ 66

1.0 STRATEGIC SIGNIFICANCE OF URANIUM

The strategic significance of uranium has long been recognized, both in the United States and abroad.

In most countries, key decisions with respect to uranium are made by governments, not the private sector. The uranium industry in Canada, for example, has been developed through a pervasive system of government support and control. Canada requires that its state-owned utilities purchase all uranium requirements for 50 years before allowing uranium exports. Both Canada and Australia -- the leading exporters of uranium to the United States -- have in the past embargoed uranium exports for political reasons. Neither country sells uranium to the U.S. for military purposes.

Most industrial nations have established uranium supply policies for their nuclear power industries. France, for example, which has a limited supply of its own uranium, uses its domestic production first, then relies on government equity-owned production from producing nations around the world. Other nations which lack domestic uranium resources all have specific targets for inventory, equity ownership of production and long-term contract coverage of required natural and enriched uranium supply.

The United States today lacks any coherent uranium supply policies, despite the recognized strategic significance of uranium. Yet almost one-half of the capital base of the U.S. power industry is invested in 120 uranium-fueled nuclear facilities that will soon supply 20 percent of U.S. electricity requirements. Even if no new nuclear plants are built -- which is unlikely over the long run -- these reactors alone will burn more than 2 billion pounds of U308 in their lifetimes. U.S. defense needs must also be assured. In particular, the U.S. fleet of 150 uranium-fueled submarines and the surface fleet must have sufficient uranium to assure an uninterrupted fuel supply.

The importance of uranium to the national security was recognized by Congress almost 25 years ago when it enacted section 161(v) of the Atomic Energy Act. This requires that the enrichment of foreign uranium be restricted in order to preserve a viable domestic uranium industry.

In reporting legislation to the Senate in 1987 to encourage the use of domestic uranium, the Senate Energy Committee reaffirmed that "Congress has considered a viable domestic uranium industry as vital to the U.S. national defense and security." And it went on to state that: "While dependency on other nations for strategic minerals generally, and for uranium in particular, may bring some short-term economic gain, it also involves long-term economic and energy security risks to the Nation's common defense and security."

The domestic uranium industry is no longer viable. Subsidized foreign producers are assuming control of the U.S. uranium market, the largest in the world. In the absence of action by Congress and the Executive Branch, the domestic uranium industry so long deemed vital to national security will no longer exist.

2.0 OVERVIEW - INTERNATIONAL URANIUM MARKET

The commercial market in nuclear fuel is truly international in scope. The trend towards "internationalization" has accelerated during the decade of the 1980's, especially for U.S. nuclear utilities.

Natural uranium concentrates can be procured in Australia, converted in France, enriched in the United States, consumed in Japan and "recycled" in the United Kingdom. All of these transactions are subject to a multitude of governmental policies and international agreements addressing everything from an "approved" export price to the Free World's non-proliferation program.

2.1 URANIUM PRODUCTION TRENDS

Table 2.1-1 provides a summary of Free World (World Outside Communist Areas - "WOCA") uranium production (actual and estimated) during the period 1980-1989. Total output has declined by more than 15 percent over that period to its estimated 1988 level of 96.8 million pounds U308.

During this eight year period ending in 1988, domestic uranium production declined by almost 70 percent to approximately 13.5 million pounds U308. Current U.S. uranium production levels represent only 13 percent of the entire WOCA output as compared to almost 38 percent as recently as 1980.

It is noteworthy that in 1985, for the first time ever, WOCA uranium production fell below WOCA uranium requirements, a situation which has continued since then. The overproduction throughout much of the commercial nuclear power era has led to a substantial inventory of uranium in its various forms (natural concentrates, uranium hexifloride, enriched uranium hexifloride and fabricated fuel). According to the most recent data reported by the Energy Information Administration (EIA), U.S. utilities held inventories totaling 137.4 million pounds U308 at the end of 1987, while inventories held by all U.S. companies (includes utilities, producers, fuel fabricators, etc.) aggregated 162.9 million pounds U308. However, worldwide uranium inventory levels are gradually decreasing.

Table

2.1-1

Uranium Concentrate Production -

World Outside Communist Areas (WOCA)

1980-1989

(millions of pounds U_3O_8)

	WOCA	U.S.	U.S. as % OF WOCA
1980	114.4	43.1	37.7
1981	114.3	38.5	33.7
1982	107.3	26.9	25.1
1983	95.4	21.2	22.2
1984	100.7	14.9	14.8
1985	91.7	11.3	12.3
1986	97.3	13.5	13.9
1987	95.4	13.0	13.6
1988	96.8	13.5	14.0
1989 (proj.)	95.0	12.0	12.6

2.2 URANIUM SUPPLY INDUSTRY CONCENTRATION

Persistently depressed uranium prices and limited prospects for near-term improvement have lead to increasing concentration in the supply industry. Corporate acquisitions of uranium reserves/production facilities as well as the merger of the government-owned Saskatchewan Mining Development Corporation ("SMDC") and Eldorado Nuclear Ltd. in Canada have resulted in a significant level of control by a limited number of corporations.

At the Thirteenth Annual Symposium of the Uranium Institute (September 1988), Mr. Pierre Verbeek of the Belgian utility group, Synatom, presented his evaluation of the need for nuclear fuel procurement diversification. In his paper (copy reproduced as Appendix A), "An Insight Into Utilities' Diversification Policy," Mr. Verbeek states: "Since 1983, the trend has reversed: concentration of production has stabilized and is now increasing, as a result of the growing share of Australia and Canada in the world total and the large production cutbacks in the USA." Moreover, he indicates that "The opening of diversification opportunities that took place during the late 1970's was partly the result of strong market involvement of very few major companies. As a result, there has been dramatic concentration in the control of uranium production: a small number of large companies now control most of the Western world production centres."

In assessing the 1987 situation, Mr. Verbeek found that four companies accounted for 41 percent of reserves and 48 percent of production. When the concept of project "control" is incorporated, the percentage of production for the four companies increases to 68 percent while six companies control 82 percent of the production.

Nuexco published its assessment of the "Three Primary Uranium Producers" in the March 1989 issue of the Nuexco Monthly Report (No. 247). The three major producers are Cameco-A Canadian Mining and Energy Corporation (the merged SMDC-Eldorado Nuclear), Cogema (the French fuel cycle company) and the RTZ Corporation (British mining conglomerate). According to Nuexco, these three primary uranium producers will participate in the production of 65 percent of world uranium during 1989, with that share likely to increase to 68 percent by 1995. The addition of Nuclear Fuels Corporation of South Africa (NUFCOR), which will likely produce approximately 9.9 million pounds U308, and Energy Resources of Australia, Ltd., which should produce around 7.1 million pounds U308, means that the top five uranium production companies will participate in the production of more than 81 million pounds U308 or approximately 82 percent of Western World production.

2.3 URANIUM CONTRACTING TRENDS

Although only about 10-15 percent of total annual uranium transactions take place in the "spot" market (usually defined as delivery within 12 months of contract execution), the uranium spot market price has taken on increasing importance over the past several years.

During the 1970's, a common pricing model for multi-year uranium deliveries involving U.S. nuclear utilities was the higher of a base price (subject to escalation) or market price at the time of delivery. Initial base prices under these agreements tended to closely parallel the spot market price at the time of contracting. Therefore, a number of long-term supply agreements were executed that contained base prices commencing at \$38.00-42.00/pound U308 subject to escalation in accordance with U.S. government economic indices. Due to high inflation rates in the late 1970's and early 1980's, delivery prices under some of these agreements reached \$70.00/pound U308 or more before deliveries were made.

Declining spot market prices and increased regulatory oversight in the area of nuclear fuel procurement led a majority of domestic utilities to favor pricing models under long-term uranium supply agreements that were directly linked to the spot market price at the time of delivery. In many cases, floor price and ceiling price limits were negotiated while in other agreements no minimum price protection was provided.

Therefore, the uranium spot market price has taken on ever-increasing importance in long-term contracting and this is likely to expand as foreign utilities adopt modifications of the U.S. pricing scheme.

The most widely-recognized uranium spot market price indicator is the Nuexco Exchange Value which is published on a monthly basis (as of the last day of the month). Table 2.3-1 provides the entire history of the Nuexco Exchange Value. On a constant dollar basis, the February 1989 Exchange Value of $11.20/pound U308 is the lowest spot market price published by Nuexco in more than 20 years.

Not surprisingly, the reasons behind the current depressed uranium spot market price are many and varied. Historical over-production resulting in excess uranium inventories; the introduction of large, government-subsidized production into the market; aggressive sales strategies designed to capture market share; the entrance of non-market countries into the international uranium market; the need to generate cash in order to service financial requirements; and the current widely-held perception that an almost never-ending supply of low-cost uranium will be available into the future are only some of the factors involved in driving the uranium spot market price down to unprecedented low levels.

TABLE
2.3-1

HISTORICAL EXCHANGE VALUES

Determined as of the last day of the month indicated ($US/lb. U_3O_8)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1968	—	—	—	—	—	—	—	6.35	6.35	6.40	6.45	6.50
1969	—	6.35	6.10	6.10	6.25	6.25	6.20	6.20	6.15	6.15	6.15	6.20
1970	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.20	6.15	6.15	6.15	6.15
1971	6.20	6.20	6.20	6.20	6.15	6.05	6.00	5.95	5.95	5.95	5.95	5.95
1972	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95
1973	5.95	6.00	6.10	6.20	6.45	6.50	6.50	6.50	6.50	6.50	6.75	7.00
1974	7.70	7.90	8.00	9.00	9.50	10.50	11.50	12.00	12.50	14.00	14.75	15.00
1975	16.00	16.00	18.00	20.00	21.00	23.00	24.70	26.00	26.00	28.50	30.00	35.00
1976	35.20	37.00	39.25	40.00	40.00	40.00	40.00	40.40	41.00	41.00	41.50	41.00
1977	41.35	41.50	41.60	41.60	42.00	42.25	42.25	42.25	42.40	42.75	43.20	43.20
1978	42.90	43.25	43.25	43.25	43.40	43.40	43.40	43.10	43.25	43.00	43.25	43.25
1979	43.25	43.25	43.25	43.25	43.25	43.00	42.70	42.70	42.20	42.20	41.00	40.75
1980	40.00	38.00	35.00	32.00	32.00	31.50	31.50	30.00	28.50	28.00	28.00	27.00
1981	25.00	25.00	25.00	25.00	25.00	24.25	23.50	23.50	23.50	23.50	23.50	23.50
1982	23.00	23.00	22.50	20.75	20.50	19.25	18.25	17.00	17.00	17.50	19.75	20.25
1983	21.50	21.75	22.25	23.25	23.50	23.50	24.00	24.00	24.00	23.50	22.50	22.00
1984	20.50	17.50	17.00	17.75	17.75	17.50	17.50	17.50	17.50	16.00	15.50	15.25
1985	15.00	15.00	15.00	14.25	15.00	15.00	15.75	16.00	16.00	16.50	16.75	17.00
1986	17.00	17.00	17.25	17.25	17.00	17.00	17.00	17.00	17.00	17.00	16.75	16.75
1987	16.65	16.75	17.00	17.00	17.00	16.90	16.75	16.65	16.65	16.75	16.65	16.55
1988	16.30	16.15	15.90	15.75	15.40	15.10	14.75	14.15	13.75	13.15	12.50	11.75
1989	11.60	11.20										

HISTORICAL US PREMIUM (Relative to the Exchange Value)

Determined as of the last day of the month indicated ($US/lb. U_3O_8)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	0.65	0.75
1987	0.85	1.00	1.50	1.50	0.90	0.60	2.50	2.35	2.10	1.65	0.85	0.65
1988	0.70	0.50	0.15	0.25	0.60	0.00	0.00	0.00	0.00	0.00	None	

from: Nuexco International Corporation.
Monthly Report on the Nuclear Fuel Market.
March 1989. No. 247

3.0 CURRENT STATUS OF THE DOMESTIC URANIUM INDUSTRY

The most recent government publications relating to the domestic uranium industry address calendar year 1987 ((Uranium Industry Annual 1987), published September 1988, DOE/EIA-0478 (87) and Domestic Uranium Mining and Milling Industry 1987 Viability Assessment, published December 1988, DOE/EIA-0477 (87)).

The U.S. uranium industry was buffeted by several crucial events during 1988. Therefore, this section serves to provide an update of the status of the domestic uranium industry through February, 1989.

The year opened with the spot market price (as measured by the Nuexco Exchange Value) standing at $16.55/pound U308 plus a premium for domestic-origin concentrates of $0.65/pound U308 (yielding a spot market price of $17.20/pound U308 for U.S.-origin U308). The Nuexco Exchange Value for U.S.-origin concentrates had peaked the previous July at $19.25/pound U308 (comprised of the basic Exchange Value of $16.75/pound U308 and a U.S. premium of $2.50/pound U308). The spot market price for domestic origin uranium had declined by just under 12 percent between the end of July 1987 and the end of December 1988 but reasonable optimism remained that the outcome of the producers' lawsuit would be in favor of the plaintiffs and, therefore, the Tenth Circuit Court's opinion directing DOE to restrict uranium imports would be upheld.

That guarded optimism began to fade following the granting of certiorari by the U.S. Supreme Court. Spot uranium prices began to weaken as inventory holders altered their sales strategies and began to offer more concentrates at increasingly aggressive prices.

The U.S. Supreme Court decision in June, 1988, which reversed the lower court, sent a shockwave through the uranium market. The Nuexco Exchange Value plummeted throughout the summer months as the U.S. premium disappeared and the base Exchange Value declined at an accelerating rate. The spot market price fell by $0.60/pound U308 during the month of August alone (more than a four percent drop).

By late Summer-early Fall, the debate over the U.S.-Canada Free Trade Agreement increased in intensity on both sides of the border. However, it was well-recognized that the exemption of Canadian-origin concentrates from any potential restrictions under section 161(v) of the Atomic Energy Act of 1954 would drastically alter market perceptions and likely lead to further price weakening. This trend continued throughout the remaining months of 1988 with the Exchange Value losing $0.60/pound U308 during the month of September, another $0.65/pound U308 during October and $0.75/pound U308 during November. The Exchange Value finished the year at $11.75/pound U308 representing a decline of $5.45/pound U308 (almost 32 percent) over the twelve month period. Over the eighteen month period, July 1987-December 1988, the Nuexco Exchange Value lost $7.50/pound U308 (U.S.-origin) or almost forty percent.

It is noteworthy that the Nuexco Exchange Value has not risen above $18.00/pound U308 (except for the brief period in mid-to-late 1987 for U.S.-origin concentrates) since February 1984, a period of five years.

This precipitious decline is continuing into 1989 with the Exchange Value at the end of February being $11.20/pound U308 and likely to go lower.

As reported by the EIA, domestic uranium production fell below 20 million pounds in 1984 when a total of 14.9 million pounds U308 were produced from domestic sources. Following a low production level of 11.3 million pounds U308 in 1985, U.S. uranium output increased to 13.5 million pounds U308 in 1986, and then fell slightly to 13.0 million pounds U308 in 1987. Recent estimates of 1988 production indicate that domestic uranium production increased marginally to 13.5-13.8 million pounds U308. However, U.S. production is expected to decline to 12 million pounds U_3O_8 in 1989.

A trend towards lower production cost facilities continued in 1988. Rio Algom's Lisbon Mill was closed due to economic reserve depletion. However, Chevron Resources/Total Minerals commenced operations at the Rhode Ranch Mine (surface mine), Uranium Resources, Inc. began production at the Kingsville Dome Project (ISL) as did Everest Minerals at the Highland Uranium Project (ISL).

Canada remained the uranium production region with the highest output at slightly more than 32 million pounds U308, approximately the same as 1987 production. Canadian uranium mines produce fully one-third of the Free World's uranium concentrates while the United States produces less than fifteen percent. The merger of SMDC and Eldorado Nuclear Ltd. formed the largest uranium production company in the Free World.

Another significant event which transpired during 1988 was the emergence of the Soviet Union as an aggressive seller of low-enriched uranium (LEU) in the Western World. This situation is discussed in detail in a subsequent section. Moreover, the People's Republic of China reportedly secured its first multi-year uranium supply agreement with a U.S. utility, as well as completing its first spot sale of uranium concentrates in the United States.

According to industry sources (the Uranium Exchange Company), U.S. utilities executed a total of eighteen new long-term uranium supply agreements during 1988. Domestic producers will supply 13.0 million pounds U308 during the period 1989-1997 while foreign suppliers committed to deliver a like quantity;

however, domestic producers may be supplying purchased foreign uranium.

Following the ratification of the U.S.-Japan Nuclear Cooperation Agreement in July, several domestic uranium suppliers were selected by Japanese utilities to negotiate long-term uranium sales agreements. These domestic producers will deliver in excess of 15 million pounds U308 over the period 1990-1999 to five Japanese utilities.

4.0 FACTORS CONTRIBUTING TO THE DEPRESSED STATE OF THE URANIUM INDUSTRY

The domestic uranium supply industry has been adversely impacted by a series of federal government policies regarding the provision of enrichment services. As will be discussed in the following sub-section, the USDOE (and its predecessor, the Atomic Energy Commission) developed policies which led to the build-up of excessive inventories of uranium and enriched uranium which continue to impact the uranium market.

Although the DOE has attempted to respond to competitive pressures (many of which were in response to its own inflexible approach to the nuclear fuel market), it continues to feel the presence of competitive enrichment suppliers in Europe and, recently, in the Soviet Union and People's Republic of China. In its attempt to correct its own problems, the DOE chose to ignore its legislative responsibilities under section 161(v) of the Atomic Energy Act of 1954. That failure to act will be felt in the domestic uranium industry throughout the 1990's.

Secondly, the discovery and development of high-grade uranium deposits in Saskatchewan and Australia led to aggressive marketing/sales campaigns by suppliers from both of those countries. Aided by preferential treatment due to their governmental ownership structure, two Saskatchewan producers (SMDC and Eldorado Nuclear) pursued the acquisition of market share in Europe, the Far East and the United States. These programs, coupled with a similar sales strategy by Energy Resources of Australia, directly contributed to the deterioration in the uranium market and an increasing dependence on the part of U.S. nuclear utilities on foreign-origin uranium.

4.1 U.S. GOVERNMENT ENRICHMENT POLICIES

From the early days of the commercial nuclear power program, the enrichment policies of the U.S. government have exerted a profound effect upon the uranium production industry. Changes in these policies have resulted in immense impacts on uranium suppliers, worldwide.

The Atomic Energy Commission (AEC) was the sole source of enrichment services in the Free World during the formative years of commercial nuclear power. Therefore, private utilities in the U.S., Europe and the Far East were required to accept any and all contracting policies which the AEC promulgated. Moreover, the AEC proved to be insensitive to the realities of the marketplace.

During the 1960's, Special Nuclear Material was leased to private utilities by the AEC. From 1969 to 1973, the AEC provided enriched product to utilities under short-term "firm" quantities and longer-term requirements-type agreements. In December, 1972, the AEC suspended all enrichment contracting under the requirements-type contract which allowed the customer to closely coordinate its enrichment with actual demand for nuclear fuel. Enrichment contracting recommenced in September, 1973 under a new enrichment contract, the Long-Term, Fixed-Commitment (LTFC) agreement, which required the customer to establish a firm enriched product withdrawal schedule for a ten-year rolling period. There was virtually no quantity flexibility until the eleventh year so that a utility could not react to delays in reactor construction schedules. In any event, the initial core enriched product had to be taken on the original schedule.

As has been widely reported, the LTFC contract led to a significant build-up of uranium inventories as well as high levels of uranium contracting in anticipation of required but unneeded feed deliveries to the AEC.

Unfortunately for the AEC, the unreliability of its enrichment contracting practices and policy changes led to the creation of foreign-based competition. The Soviet Union began to offer long-term enrichment agreements through its sales agent, Techsnabexport, which closely paralleled the terms of the LTFC but at a price which was a discount from the AEC enrichment services price. In addition, the European consortium, Eurodif, entered the marketplace offering fixed commitment enrichment services contracts to its equity participants as well as direct sales to other European and Japanese utilities.

Inevitably, uranium inventories began to accumulate as fixed commitment enrichment contracts dictated uranium procurement and feed deliveries. It has been estimated that uranium requirements dictated by fixed commitment enrichment contracts exceeded actual reactor requirements by thirty-five percent during this period.

Finally recognizing the realities of the marketplace, the DOE, as the successor to the AEC, began offering another form of enrichment contract, the Adjustable, Fixed Commitment contract (AFC) in 1978. This contract allowed a readjustment of enriched product withdrawal schedules, but not total realignment with reactor requirements. The ten-year rolling period was replaced with a four-year firm quantity commitment, ten percent quantity flexibility for the fifth year, twenty percent flexibility for the sixth year and then 100 percent flexibility for the seventh year and beyond. More than eighty percent of the LTFC contract holders opted to convert to the AFC. This change enabled utilities to start reducing excess inventories which had accumulated under the previous enrichment policy. It also allowed utilities to conduct advanced planning to avoid accumulating the excessive inventories which would have accumulated under the LTFC.

Once again recognizing that the AFC contract fell short of the needs of the DOE enrichment customers and that foreign enrichers were aggressively pursuing market share, the DOE introduced the Utility Services Enrichment Contract (USEC) in January, 1984. Under this approach, the enrichment customer was offered a requirements-type contract which would allow for better coordination of enrichment feed deliveries and reactor requirements. Moreover, the DOE offered existing AFC contract holders various incentives to convert. Immediate near-term flexibilities were made available if the customer would commit to purchase at least seventy percent of its enrichment services from DOE.

The introduction of the USEC had a profound impact on the uranium industry. Utilities now had the necessary enrichment flexibility to match reactor demand and accordingly, initiated aggressive inventory draw-down strategies. These strategies reduced near-term purchases and procurement activities. In addition, utilities pressed existing uranium suppliers for greater delivery flexibilities and, in some cases, negotiated contract terminations for now unneeded uranium concentrates.

In an analysis presented before the Ninth Annual Symposium of the Uranium Institute (September 1984), Mr. Richard K. Anderson (Vice President-Nuexco) projected that the introduction of the USEC would result in a reduction of uranium demand totaling 86 million pounds U308 over the 1984-1991 time frame. An additional reduction of 32 million pounds U308 was likely to occur due to utilities purchasing low-enriched uranium (LEU) inventories from other USEC holders with excess inventories. Therefore, these two related events would result in a reduction of 118 million pounds of U308 demand which was likely to take place under the new contract. It is clear that either DOE did not take this potential effect into account prior to issuing the USEC or the need to preserve its market share and its own viability overrode any concern for the uranium industry.

The introduction of the USEC and its uranium demand impacts took place contemporaneously with the aggressive marketing activities of subsidized Australian and Canadian uranium suppliers, thus accelerating the market deterioration which commenced in early 1984.

4.2 URANIUM IMPORTS - HISTORY AND POTENTIAL

Prior to discussing the production capability and governmental policies of the major foreign uranium supply regions, it is instructive to briefly review uranium imports into the United States.

As shown in Table 4.2-1, contracting for foreign-origin uranium totaled 30 separate agreements during 1987 for the delivery of 26.6 million pounds U308. According to EIA, Canada will be the source for 18.2 million pounds U308 and Australian suppliers will deliver the remaining 8.4 million pounds U308.

During the period, 1982-1987, 95 agreements for the importation of foreign-origin uranium were executed for an aggregate delivery quantity of 109.3 million pounds U308.

Table 4.2-2 provides an overview of historical uranium imports and exports as well as commitments as of December 31, 1987. Although uranium export contracts were a significant counter balancing factor through the mid-1980's, it is clear from the data presented that uranium import commitments are already significant throughout the 1990's.

Contracted uranium imports from Australia and Canada constitute the bulk of currently committed future uranium imports (Table 4.2-3). More detailed information regarding these two uranium supply regions is presented in subsequent sections of this memorandum.

According to the data and projections contained in the most recent DOE/EIA viability assessment ("Domestic Uranium Mining and Milling Industry 1987- Viability Assessment"), uranium imports exceeded 51 percent of domestic uranium requirements in 1987 (Table 4.2-4). Moreover, under a continuation of current market conditions, uranium imports are projected to increase through the early 1990's and exceed 70 percent of domestic uranium requirements by 1992 prior to declining slightly through 1996.

As will be discussed in subsequent sections, the project development and marketing strategies of no more than three Canadian uranium suppliers and a single Australian supplier have directly led to the chaotic market conditions which have severely impacted the domestic uranium industry. The recent emergence of the Soviet Union and the People's Republic of China as aggressive uranium sellers has only served to exacerbate the situation.

TABLE
4.2-1

Commitments and Deliveries of Foreign-Origin Uranium, 1970-1987

Year of Contract Signing	New Contracts[a]		Actual Deliveries (million pounds U_3O_8)
	Number	million pounds U_3O_8	
1970	1	4.2	0
1971	0	0	0
1972	2	15.4	0
1973	1	2.2	0
1974	2	21.2	0
1975	5	9.2	1.4
1976	2	1.0	3.8
1977	1	3.0	5.8
1978	2	1.0	5.2
1979	1	1.6	3.0
1980	1	4.6	3.8
1981	4	9.8	6.6
1982	17	28.4	17.1
1983	8	6.2	8.2
1984	15	11.1	12.5
1985	10	14.9	11.7
1986	15	22.1	13.5
1987	30	26.6	14.8
Total	117	[b]182.5	108.8

[a] These figures represent total new contractual commitments. Actual deliveries under these contracts are for the year of contract signing and/or future years.

[b] This figure does not match total imports shown in Table 40 because of cancellations and contract delivery modifications (i.e., increase or decrease in quantity from that originally specified in contracts signed prior to 1986).

Sources: 1970-1983—Energy Information Administration, *Survey of United States Uranium Marketing Activity 1983* (August 1984). 1984-1986—Energy Information Administration, *Uranium Industry Annual 1986* (October 1987). 1987—Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1987).

TABLE
4.2-2

Imports and Exports of Uranium by Utilities and Domestic Suppliers, 1967 to 2000 and Later, as of December 31, 1987

(Million Pounds U_3O_8)

Year of Delivery	Imports		Exports*		Net Imports (Net Exports)	
	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative
Actual Deliveries						
1967	0	0	1.4	1.4	(1.4)	(1.4)
1968	0	0	1.6	3.0	(1.6)	(3.0)
1969	0	0	1.0	4.0	(1.0)	(4.0)
1970	0	0	4.2	8.2	(4.2)	(8.2)
1971	0	0	0.4	8.6	(0.4)	(8.6)
1972	0	0	0.2	8.8	(0.2)	(8.8)
1973	0	0	1.2	10.0	(1.2)	(10.0)
1974	0	0	3.0	13.0	(3.0)	(13.0)
1975	1.4	1.4	1.0	14.0	0.4	(12.6)
1976	3.6	5.0	1.2	15.2	2.4	(10.2)
1977	5.6	10.6	4.0	19.2	1.6	(8.6)
1978	5.2	15.8	6.8	26.0	(1.6)	(10.2)
1979	3.0	18.8	6.2	32.2	(3.2)	(13.4)
1980	3.6	22.4	5.8	38.0	(2.2)	(15.6)
1981	6.6	29.0	4.4	42.4	2.2	(13.4)
1982	17.1	46.1	6.2	48.6	10.9	(2.5)
1983	8.2	54.3	3.3	51.9	4.9	2.4
1984	12.5	66.8	2.2	54.1	10.3	12.7
1985	11.7	78.5	5.3	59.4	6.3	19.1
1986	13.5	92.0	1.6	61.0	11.9	31.0
1987	14.8	106.8	1.0	62.0	13.8	44.8
Subtotal	106.8	–	62.0	–	–	–
Commitments						
1988	10.0	10.0	1.6	1.6	8.4	8.4
1989	9.4	19.4	1.5	3.1	7.9	16.3
1990	11.6	31.0	1.7	4.7	9.9	26.2
1991	10.4	41.4	1.7	6.4	8.8	35.0
1992	10.7	52.1	1.5	7.9	9.2	44.2
1993	8.4	60.5	1.5	9.3	6.9	51.1
1994	7.5	68.0	1.5	10.8	6.0	57.1
1995	8.6	76.6	0.7	11.5	7.9	65.0
1996	7.5	84.0	0.7	12.2	6.8	71.8
1997	6.3	90.3	0	12.2	6.3	78.1
1998	6.3	96.6	0	12.2	5.3	83.4
1999	3.9	99.5	0	12.2	3.9	87.3
2000 and Later	10.0	106.5	0	12.2	10.0	97.3
Subtotal	106.5	–	12.2	–	97.3	–
Total	213.3	–	74.2	–	–	–

* Figures for 1967-1981 represent exports by uranium producers only.

– = Not applicable.

Note: Totals may not equal sum of components because of independent rounding.

Sources: 1967-1983—Energy Information Administration, *Survey of United States Uranium Marketing Activity 1983* (August 1984). 1984-1986—Energy Information Administration, *Uranium Industry Annual 1986* (October 1987). 1987-Beyond 2000—Energy Information Administration, Form EIA-85 "Uranium Industry Annual Survey" (1987).

TABLE
4.2-3

Foreign Production Capability and Export Commitments

(Million Pounds U_3O_8)

Exporting Country	Year	$30 per Pound U_3O_8 Production Capability	Export Commitments to the United States	Other Export Commitments	Available for Export
Australia	1988	10.4	1.7	10.3	[a]-1.6
	1990	14.3	3.6	9.4	1.3
	1995	22.1	3.0	8.2	10.9
	2000	22.1	1.2	0.5	20.4
Canada	1988	31.2	8.2	22.0	[ab] -2.3
	1990	31.5	7.8	19.9	[ab] -0.5
	1995	33.8	5.1	9.8	[b] 14.8
	2000	18.7	2.2	6.2	[b] 5.0
South Africa	1988	14.3	0.0	9.0	[c] 4.2
	1990	14.3	0.0	9.1	[c] 4.3
	1995	14.3	0.0	0.7	[c] 12.3
	2000	14.3	0.0	0.0	[c] 13.0
Other[d]	1988	26.4	0.1	19.5	6.8
	1990	27.5	0.2	20.5	6.8
	1995	27.5	0.5	18.8	8.2
	2000	27.5	0.0	11.0	16.5
Total	1988	82.3	10.0	60.8	[bc] 7.1
	1990	87.6	11.6	58.9	[bc] 11.9
	1995	97.7	8.6	37.5	[bc] 46.2
	2000	82.6	3.4	17.7	[bc] 54.9

[a] Excess commitments satisfied from existing producer inventories.

[b] Excludes 3.3, 4.3, 4.1, and 5.3 million pounds U_3O_8 for the 1988, 1990, 1995, and 2000 requirements of Canadian nuclear power plants.

[c] Excludes 1.1, 0.9, 1.3, and 1.3 million pounds U_3O_8 for the 1988, 1990, 1995, and 2000 requirements of South African nuclear power plants.

[d] Includes People's Republic of China, Gabon, Namibia, and Niger, which currently do not export to the United States. Does not include countries that produce uranium exclusively for their own use and have no announced plans for future exports.

Note: Totals may not equal sum of components due to independent rounding.

Sources: Production capability - OECD Nuclear Energy Agency/International Atomic Energy Agency. *Uranium: Resources, Demand and Production* (Paris, France, 1988).

Export commitments to the United States - Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1987). No imports from South Africa were reported in the "Uranium Industry Annual Survey" (1987).

Other export commitments - Nuclear Assurance Corporation, *U_3O_8 Status Report* (Norcross, Georgia, February 1988).

Data for Canadian and South African nuclear plants are from Energy Information Administration, *World Nuclear Fuel Cycle Requirements 1988*, DOE/EIA-0436(88) (Washington, DC, September 1988).

TABLE
4.2-4

Uranium Import Commitment Dependency, Current and Projected Status, 1980-2000

Year	Projected Domestic Uranium Requirements (million pounds U_3O_8)	Current Import Contracts[a] (million pounds U_3O_8 equivalent)	Projected Imports[a,b] (million pounds U_3O_8 equivalent)	Imports as Percent of Projected Domestic Uranium Requirements	
				Current Import Contracts	Projected Imports[b]
[c]1980	24.7	3.6	--	14.6	--
[c]1981	22.4	6.6	--	29.5	--
[c]1982	33.1	17.1	--	51.7	--
[c]1983	31.6	8.2	--	25.9	--
[c]1984	28.3	12.5	--	44.2	--
[c]1985	34.0	11.7	--	34.4	--
[c]1986	30.8	13.5	--	43.8	--
[c]1987	[d] 29.0	14.8	--	51.1	--
1988	36.9	10.0	19.3	27.1	52.2
1989	34.7	9.4	21.2	27.1	61.0
1990	34.9	11.6	22.6	33.0	64.7
1991	34.7	10.4	22.8	30.0	65.7
1992	32.6	10.7	23.1	32.8	70.8
1993	35.1	8.4	22.7	23.9	64.5
1994	33.2	7.5	22.9	22.6	68.9
1995	33.2	8.6	21.5	25.9	64.7
1996	35.2	7.5	21.1	21.3	60.0
1997	34.2	6.3	18.9	18.4	55.3
1998	33.4	5.3	17.6	15.9	52.7
1999	33.8	3.9	17.5	11.5	51.8
2000	36.6	3.4	17.7	9.3	48.4

[a] Gross imports; differ from net imports in Tables E3 and E4, where export commitments have been subtracted.

[b] Comprises both natural and enriched uranium imports, which are indistinguishable in the EIA modeling system.

[c] Actual.

[d] In 1987, domestic utilities delivered 15.9 million pounds U_3O_8 equivalent of foreign-origin uranium to enrichment suppliers. This quantity represented 54.9 percent of U.S. uranium requirements.

Sources: Import contract data – Energy Information Administration, *Survey of United States Uranium Marketing Activity 1983*, DOE/EIA-0403(83) (Washington, DC, August 1984) and Form EIA-858, "Uranium Industry Annual Survey" (1984-1987).

Projections in this table were derived using the Uranium Market Model and methodology described in Appendix C.

5.0 SIGNIFICANT FOREIGN URANIUM PRODUCTION REGIONS

This section of the memorandum includes information regarding uranium production (current and planned), governmental policies regarding uranium development and export contracting as well as apparent marketing strategies of uranium suppliers in Australia and Canada. Moreover, a brief discussion of recent marketing activities by the People's Republic of China and the Soviet Union are provided.

Clearly, there are other uranium supply regions which might play a significant future role in the U.S. market - e.g., Namibia, following independence. However, based upon current import commitments by U.S. nuclear utilities and likely future contracting, it is probable that the four previously-mentioned supply regions will contribute the majority of foreign-origin uranium purchased by U.S. utilities in the foreseeable future.

5.1 AUSTRALIAN URANIUM INDUSTRY

Despite its vast potential for uranium development, the government of Australia has adopted various policies which have limited the growth of its uranium supply industry.

The historical development of the Australian uranium industry is summarized in Appendix B. This material has been taken from a 1986 comprehensive assessment of the Australian uranium industry developed by New York Nuclear Corporation, a uranium brokerage and consulting firm located in Scarsdale, New York.

Suffice it to say, uranium has always been a politically-sensitive issue in Australia as evidenced by the extensive policies adopted by the Australian Labor Party and the government of Robert Hawke.

5.1.1 Australian Uranium Production

Uranium production averaged just under 10.0 million pounds U308/year over the period 1984-1988 (Table 5.1-1). Energy Resources of Australia, Ltd. (E.R.A.) continues to lead in individual production from its Ranger Mine (estimated 7.1 million pounds U308 in 1988). The Nabarlek Project has ceased production due to the depletion of its stockpiled ore reserves. However, the new multi-mineral project, Olympic Dam, commenced uranium production in mid-summer 1988 and is expected to reach an annual production rate of 4.0 million pounds U308 by the early 1990's.

Table

5.1-1

Australian Uranium Production

(1982-1988)

Year	Pounds U_3O_8 (x 1,000)
1982	11,500
1983	8,350
1984	11,400
1985	8,450
1986	10,800
1987	9,800
1988	9,300

E.R.A. plans to expand the output of the Ranger Mine/Mill complex to more than 13.0 million pounds U308/year by the mid-1990's, almost doubling its production capacity.

5.1.2 Australian Uranium Development and Export Policies

The 36th National Conference (1984) of the Australian Labor Party (ALP) saw the adoption of extensive ALP policies regarding energy development and exports, especially uranium (Appendices B and C).

Resource Ownership and Control

A minimum equity participation of 51 percent by Australian interests was set forth for resource development projects. It is interesting to note that the ALP stated that an ALP government would utilize its export powers under the Constitution to enforce that provision.

Moreover, the Foreign Investment Review board was to be provided "with clearer guidelines to facilitate a more rigorous evaluation of the economic and social benefits and costs of resource projects and minimize the extent to which minority foreign ownership can exercise control."

Uranium Mine Development

The ALP policy established the so-called "three mine" uranium development policy. Under this provision, the ALP government would only allow uranium exports from three specified projects, namely Nabarlek, Ranger and Roxby Downs (Olympic Dam) and prohibit the development of any other uranium mines.

Moreover, the policy specifically prohibited the export of Australian uranium to France due to that country's nuclear testing in the South Pacific (shipment ban since lifted).

Floor Price Requirement

The ALP policy statement specifically indicates that all export contracts must comply with Australia's floor price. This governmental policy was set forth in the early 1970's through the requirement for "Ministerial Determinations." Under this process, the Minister of Trade is able to prescribe the uranium pricing provisions contained in export sales agreements.

As discussed in Appendix B, the federal government has modified the floor price policy on several occasions, usually to facilitate marketing activities by the producers. However, the floor price requirement has created marketing difficulties, especially in the United States, where utilities have insisted upon spot market pricing under long-term uranium supply agreements. Energy Resources of Australia has successfully implemented a U.S. sales strategy which effectively removed that contracting impediment (discussed in the next sub-section).

5.1.3 Marketing/Sales Strategies - Australian Uranium Producers

As previously mentioned, Australian government policies have played a major role in marketing/sales activities by Australian uranium producers. Fluctuating government policies regarding the export of Australian uranium have resulted in the loss of long-term uranium supply agreements due to the revocation of previously issued Letters of Determination. In addition, the floor price requirement necessitated an innovative sales strategy in order to gain crucial market share in the early-mid 1980's in the face of mounting competition from Saskatchewan producers.

Energy Resources of Australia conceived and implemented a marketing/sales strategy directed principally at U.S. utilities which proved to set the standard for several years in the early 1980's. E.R.A. had successfully committed a portion of the Ranger Mine output to equity partner utilities in Europe and the Far East under sales agreements which adhered to the "official" Australian floor price of $30.08/pound U3O8. In fact, the initial deliveries under these "owner/customer" agreements were at prices which escalated above $40.00/pound U3O8. These high-priced sales agreements allowed E.R.A. to adopt a very aggressive U.S. sales strategy.

Recognizing the desire on the part of U.S. utilities to price deliveries under long-term uranium supply agreements at the spot market price at the time of delivery, E.R.A. exhibited a willingness to offer that type of pricing formula. However, in some cases, the utility had the right to defer/cancel any delivery in the event that the Australian floor price was greater than the prevailing spot market price. In other instances, E.R.A. made a firm commitment to deliver natural uranium concentrates of "acceptable" origin (usually defined as non-South African or Namibian) at the spot market price no matter what the official floor price. In these circumstances, E.R.A. would simply procure the necessary material either through loans or spot market purchases for redelivery to the utility.

As previously stated, this strategy proved to be highly successful. E.R.A. has executed multi-year uranium supply agreements with at least 13 U.S. nuclear utilities for deliveries extending into the 1996-1998 time frame. For example, E.R.A. is committed to deliver almost 3.0 million pounds U3O8 to domestic utilities in 1991 alone. In addition to its U.S. contracts, E.R.A. has more than ten contracts to supply Asian and Western European utilities.

5.2 CANADIAN URANIUM INDUSTRY

The Canadian uranium industry, especially the Province of Saskatchewan, dominates Western World production. During the period 1956-1988, Canadian uranium production totaled more than 557 million pounds U3O8. Since 1985, Canadian production has exceeded thirty percent of the Western World's total production reaching 32.3 million pounds U3O8 in 1988.

Appendix D provides an overview of the historical development of the Canadian uranium production industry. This material has been taken from a report on the Canadian uranium industry developed in 1986 by New York Nuclear Corporation.

5.2.1 Canadian Uranium Production

Uranium production in Canada is derived from two major regions, the Elliot Lake area of Ontario and the Province of Saskatchewan. It is important to understand the vast differences between the geologic regimes in these two areas as well as the development history of each.

Elliot Lake

The uranium reserves of Elliot Lake are generally high-cost, low-grade and mined by underground methods. Rio Algom Mines Ltd. operates a total of three underground mines in the region; New Quirke, Panel and Stanleigh. These mines produced as much as 7.6 million pounds U3O8 in 1984 but have since declined in production to 6.1 million pounds U3O8. This reduction closely reflects the delivery schedules to six utilities located in Japan, South Korea, West Germany, the United Kingdom, the United States (Duke Power) as well as the provincial-owned utility, Ontario Hydro. Under its long-term supply agreement Ontario Hydro was obligated to invest more than $C330 million for the rehabilitation of Rio's underground mines.

Denison Mines Ltd. operates the other large mine/mill complex in Elliot Lake. Production during 1988 is estimated at 5.5 million pounds U3O8, an increase of 17 percent over the 1987 total (4.7 million pounds U3O8). Once again, due to the relatively high production cost, Denison's annual production closely parallels its delivery commitments to Tokyo Electric Power Company and Ontario Hydro. The provincial utility, Ontario Hydro, also provided loans estimated at $C300 million for the rehabilitation of Denison's underground mines.

The Province of Saskatchewan

Currently, there are three operating uranium mines in northern Saskatchewan; Cluff Lake, Rabbit Lake and Key Lake. Collectively, these facilities produced approximately 21.2 million pounds U3O8 during 1988, accounting for 65 percent of total Canadian production. Table 5.2-1 provides a summary of the production facilities over the period, 1982-1988.

TABLE
5.2-1

URANIUM PRODUCTION - SASKATCHEWAN PRODUCERS (1982-1988)

(Pounds U3O8 x 1,000)

	Cluff Lake	Rabbit Lake	Key Lake
1982	3,820	578	---
1983	1,770	3,234	---
1984	1,600	3,538	---
1985	2,170	2,142	11,100
1986	2,300	3,190	12,590
1987	2,150	5,710	13,517
1988	2,100	6,900	12,030

Cluff Lake

The Cluff Lake Project commenced operations in 1980. The project is owned by French interests (80 percent) and Cameco (20 percent). Annual uranium production has been in the range 2.1-2.3 million pounds U3O8 since 1985. The majority of production is believed to be committed to Cogema (French fuel cycle company) at least until the latter half of the 1990's.

Rabbit Lake

The Rabbit Lake complex produced approximately 6.9 million pounds U3O8 during 1988, which represented an increase of almost 21 percent from the 1987 total (5.7 million pounds U3O8) and an increase of 116 percent over the 1986 level of 3.2 million pounds U3O8.

The Rabbit Lake Project came under the 100 percent ownership of Cameco following the SMDC-Eldorado merger. Eldorado had acquired the Rabbit Lake mill with a reserve base approximating 66.0 million pounds in 1982 from Gulf Minerals Canada Limited and Uranerz Canada Limited. Eldorado has previously completed a refinancing program with the Government of Canada in which the federal government received $C300 million of common and preferred stock in exchange for the governmental uranium stockpile aggregating 14.5 million pounds U3O8. Eldorado then utilized 10.34 million pounds U3O8 of that material to purchase the Rabbit Lake Project.

During the ensuing years, Eldorado expanded the reserve base around the Rabbit Lake mill to more than 200 million pounds U3O8 at a weighted average ore grade approaching 2.8 percent U3O8. Recently, Cameco sold a large reserve block called Eagle North (52.0 million pounds U3O8) to the German uranium company, Uranerz.

Key Lake

The Key Lake Project represents the largest, low-cost uranium production site in the Free World. Controlled by Cameco, Key Lake entered commercial operation in mid-1983 based upon a projected annual production rate of 12.0 million pounds U3O8. The reserve base was estimated at 155 million pounds U3O8 at an average ore grade of 2.5 percent U3O8.

Planned Uranium Production Centers

The Athabasca Basin region of the Province of Saskatchewan currently hosts the three operating uranium production centers: Cluff Lake, Key Lake and Rabbit Lake. Uranium exploration activities have lead to the discovery of additional reserves of uranium.

Table 5.2-2 lists those uranium development projects which are commonly considered to be possible new production centers during the 1990's. The development dates provided are current estimates by the principal participants in each project.

However, there is growing concern that these schedules are likely to be revised for later development unless the international uranium market recovers in the near-term.

Also, it is instructive to review the ownership structure of each proposed development project. As can be seen, foreign interests are involved in almost every project to varying degrees. For example, the most likely new development will be the Cigar Lake Project in 1993. However, Cameco owns less than 50 percent of the project and, therefore, the annual output stream. This material will be marketed into Europe, the Far East and the United States. But the remaining ownership resides with participants from France (Cogema Canada/Corona Grande), Japan (Idemitsu Uranium Exploration Canada), and South Korea (Korea Electric Power Company). It is likely that those shares of the output will be committed to utilities in each of those countries and not available to the "merchant market."

Likewise, the Kiggavik Project in the Northwest Territories is currently owned by West German, British and South Korean interests. However, this allocation is likely to change if and when development takes place in order to conform to the Canadian policy regarding foreign ownership.

The Midwest Lake Project has mixed ownership consisting of Canadian (Denison Mines, Bow Valley Industries), West German (Uranerz Exploration and Mining) and Japanese (PNC Exploration

Canada) interests. There is some speculation that Denison might devote some of its production to its existing agreements with Tokyo Electric Power and Ontario Hydro in the event that its Elliot Lake operations come under additional pressure due to high costs.

As previously mentioned, project "sequencing" has become a major issue in the face of deteriorating market conditions. The Key Lake Project has already depleted more than one-third of its initial reserve base with sales into a depressed market. It is highly unlikely that Cameco will develop the Cigar Lake Project until it can secure long-term uranium supply commitments under reasonable and predictable commercial terms and conditions for a substantial portion of its ownership share. One alternative would be a phasing in of the Cigar Lake Project when Key Lake production begins to decline. Cigar Lake ore would be milled at the Key Lake mill. Therefore, the annual production rate at Key Lake mill would remain stable at 12.0 million pounds U3O8/year.

A major test mining program ($C50 million) has been initiated at Cigar Lake with a complete feasibility study due in 1990. At that point in time, the participants will make a development decision. Development decisions for the other major deposits will also be predicated, in part, on anticipated uranium market conditions.

TABLE
5.2-2

MAJOR CANADIAN URANIUM DEVELOPMENT PROJECTS
(Saskatchewan/Northwest Territories)

Project	Ownership	Reserves (x 1,000,000)	Grade (% U308)	Annual Production (x 1,000,000)	Development Date
CIGAR LAKE (Saskatchewan)	Cameco - 48.75 Cogema Canada - 32.625 (France) Idemitsu Uranium Exploration Canada (Japan) - 12.875 Corona Grande (Cogema) - 3.75 Korea Electric Power - 2.00	385.0	14.1%	12.0	1993
MIDWEST LAKE (Saskatchewan)	Denison Mines - 45.00 Uranium Exploration and Mining (West Germany) - 20.00 Bow Valley Industries - 20.00 PNC Exploration Canada (Japan) - 15.00	56.0	1.25%	3.6	1993
KIGGAVIK (Northwest Territories)	Urangesellschaft - 78.0 Central Electricity Generating Board (U.K.) - 20.00 Daewoo Corp. (South Korea) - 2.00	48.0	0.6%	2.0	1996
DAWN LAKE (Saskatchewan)	Cameco - 50.59 Cogema Canada (France) - 19.53 PNC Exploration Canada (Japan) - 17.99 Korea Electric Power - 4.50 Central Electricity Generating Board (U.K.) - 4.50	30.0	2.0%	3.0	1997
McCLEAN LAKE (Saskatchewan)	Canadian Occidental - 50.00 INCO - 50.00	14.0	1.8%	2.0	1998

5.2.2 Canadian Uranium Development and Export Policies

A review of Canadian export policies as they apply to uranium is contained in Appendix D. However, that review was prepared in early 1986 prior to several changes which have taken place in 1987-1988. The following comments provide an update on those policies.

Foreign Ownership of Uranium Mines

A revised policy regarding foreign ownership in the uranium mining sector was announced on December 23, 1987 (Appendix E).

As has been the policy in the past, the revised position of the Canadian federal government is "continuing to insist on majority Canadian ownership or control." Under the new policy, Canadian interests must own a minimum of 51 percent of a uranium property when that property enters production. However, that ownership share can be reduced in order to raise the necessary development capital if Canadian interests control the project.

The revised uranium ownership policy was announced simultaneously with the sale of an equity share of the Cigar Lake property to the Korea Electric Power Corporation (a two percent nonvoting participating interest).

Further Processing in Canada

Canada revised its "upgrading" policy for U_3O_8 as it applies to the United States in accordance with the U.S.-Canada Free Trade Agreement (Appendix F).

Basically, under this new policy, uranium concentrates which are mined in Canada and then exported to the U.S. for conversion and ultimate utilization in a domestic reactor will be granted an exemption from the further processing policy. This will also apply to Canadian concentrates which are destined for DOE enrichment and then export to a third country for utilization.

Uranium Exports Review Panel

All sales agreements for the export of uranium are subject to the review and approval of the Uranium Exports Review Panel (UERP). UERP review and acceptance of the contractual terms and conditions are prerequisites for the issuance of future annual export licenses.

The annual export license process does provide the opportunity for future governmental interference with an "approved" multi-year uranium sales agreement. Such a situation took place in 1977 when the Canadian government instituted a uranium export embargo for shipments to Japan and the European Economic Community. The dispute involved the lack of acceptable full-scope safeguards agreements and was finally resolved after more than a year of negotiations. However, the export embargo resulted in some European utilities having to buy uranium on the spot market at prices exceeding $40.00/pound U3O8.

5.2.3 Provincial and Federal Government Involvement in Uranium Development

A review of government ownership and support for uranium development is contained in Appendix G.

Although Canadian producers deny that preferential financing arrangements and infrastructure construction constitute "subsidies" to the uranium production industry, the Department of Commerce should be aware of the extent of governmental involvement, especially prior to the recent merger of SMDC and Eldorado Nuclear.

5.2.4 Marketing/Sales Strategies - Canadian Uranium Producers

The impact on the international uranium market by Canadian producers has been pervasive and, in all probability, will remain a major (if not the most significant) factor in the decade of the 1990's.

The Elliot Lake mines of Denison and Rio Algom were generally re-established or developed through the involvement of Ontario Hydro and the securing of long-term uranium agreements under pricing provisions now considered highly favorable to the producers. These contracts were secured in the 1970's prior to the emergence of the large-scale Saskatchewan producers (namely the participants in the Key Lake Mining Corporation venture and Rabbit Lake). Appendix G contains a description of these long-term uranium supply agreements. Appendix G was prepared for the UPA by Standard Research, Inc. of Saskatoon, Saskatchewan. Although the report was only prepared in a draft form, its observations should be of interest.

The Elliot Lake producers have not played any noticeable role in the uranium market during the 1980's. Their strategies appear to favor maintaining the "status quo" under their existing long-term uranium sales agreements, although annual price negotiations under these agreements have, in some instances, become difficult in the face of persistently depressed spot market prices.

Likewise, the Cluff Lake Project's ownership structure (80 percent French interests; 20 percent Cameco) has resulted in little presence for the project's production in the international marketplace. Basically, the majority of output is sold to the French (Coginter- Cogema International) with no need for sales activities in the open market. Cameco applies approximately one-third of its production share to other existing sales agreements. However, there is the possibility that Cameco's entire share might have to be marketed for deliveries commencing in the mid-1990's, but that annual total is anticipated to be less than 500,000 pounds U3O8.

The marketing/sales strategies associated with the discovery and subsequent development of the Key Lake deposit as well as the acquisition (by Eldorado Nuclear) and expansion of the Rabbit Lake Project resulted in severe pressures on the uranium market, both long-term and near-term (spot). Both SMDC and Eldorado Nuclear entered the marketplace without long-term contracts, driven by the need to secure market share at almost any cost. Relatively low forward production costs coupled with projected annual production rates exceeding 10 million pounds U3O8, caused the KLMC partners to compete aggressively for sales agreements in Europe, the Far East and, especially, the United States.

U.S. utilities were requesting pricing provisions under long-term supply agreements which allowed for a percentage discount off the Nuexco Exchange Value at the time of delivery as well as substantial delivery flexibilities, both in quantities and schedules. The KLMC partners and Eldorado were willing to meet these terms in order to obtain supply contracts.

The official Canadian "floor price" policy presented some difficulties, especially as the spot market price declined to near the $15.00/pound U3O8 level. However, an alternative was finally approved by the Uranium Export Review Panel. Under this "soft" floor price approach, the long-term uranium supply agreement contained the "official" floor price (usually $15.00/pound U3O8). However, the buying utility had the option to refuse delivery at that floor price in the event that the spot market price fell below the floor price level. Therefore, the official floor price policy was being adhered to. However, under the new strategy, the Canadian supplier had the option to deliver the affected concentrates at the spot market price at the time of delivery thus satisfying the utility's procurement criteria. The logic as presented to the Uranium Export Review Panel was that the concentrates which could not be delivered because the spot market price was below the floor price would have to be sold in the spot market due to financial demands on SMDC and Eldorado. Therefore, it made sense to go ahead and deliver the concentrates to the existing long-term utility customer rather than having to sell into the spot market.

Unfortunately, the decision to develop Key Lake without a majority of the production committed under multi-year sales agreements coupled with the substantial interest and debt repayment requirements for both Eldorado and SMDC led to aggressive spot market sales activities by both entities. This was especially the case near the end of each calendar year when the two Saskatchewan producers found it necessary to progressively lower offering prices in order to secure spot market sales. These lower spot market prices then impacted the delivery prices under their long-term sales agreements, thus aggravating their financial situation.

Progressively lower spot market prices affected the commercial terms and conditions available under multi-year sales agreements. Contractual minimum (floor) prices as well as maximum (ceiling) prices deteriorated especially in the U.S. market. This condition was accelerated by the contemporaneous sales activities by the Australian uranium producer, Energy Resources of Australia (discussed in the section on Australia).

Cameco holds a commanding market position in the United States. Based upon UPA estimates, Cameco has multi-year delivery commitments with at least 22 U.S. nuclear utilities as well as seven utilities in the Far East (Japan and South Korea) and another six long-term sales agreements with Western European nuclear utilities (West Germany, Finland, France and Sweden). Total delivery commitments approximate 9.5 million pounds U3O8 in 1989 and increase to almost 11.0 million pounds U3O8 in 1990. The annual delivery commitments in 1991-1992 exceed 11.7 million pounds U3O8/year.

It is clear that the U.S. nuclear power industry is gradually becoming heavily dependent upon Cameco as a future uranium supply source.

5.3 IMPACT OF CHINESE AND RUSSIAN URANIUM IMPORTS

Recent actions by the People's Republic of China and the USSR regarding the marketing of nuclear fuel in the West have potentially devastating consequences for U.S., as well as Canadian and Australian, uranium production.

Historically, neither of these nations were significant participants in nuclear commerce, particularly in the United States. However, for a variety of reasons not yet fully understood, both countries have initiated aggressive marketing activities focused on utilities in Western Europe and the United States.

5.3.1 People's Republic of China

The Chinese Nuclear Energy Industry Corporation (CNEIC) has been active in the Western nuclear fuel markets since the early 1980's. Following the delivery of highly enriched uranium to Argentina and Iraq (1981-1982) as well as a small quantity of concentrates to Japan's Power Reactor & Nuclear Fuel Development Corporation (1982), CNEIC gained marketing successes within Western Europe.

The German utility, Gemeinschaftskernkraftwerk Neckar (GKM), executed a long-term uranium supply agreement with CNEIC in late 1985. Electricite de France (EdF) signed a multi-year supply agreement in early 1986. Another multi-year agreement was obtained with the Finnish utility, Teollisuuden Voima Oy (TVO), in 1987 calling for the delivery of about 1.6 million pounds U3O8 over the period 1988-1996.

CNEIC has stated that its sales objective in the West is to inrease annual delivery quantities to approximately 2.6 million pounds U3O8 by the mid-1990's.

The Chinese have recently met with limited success in the United States. The UPA understands that a multi-year uranium supply agreement was executed in 1988 between CNEIC and a domestic utility. Deliveries will take place commencing in the 1990-1991 time frame. Moveover, it is thought that the CNEIC made a small (less than 100,000 pounds U3O8) spot market sale to a U.S. utility in 1988.

In the past, CNEIC has encountered difficulties in marketing to U.S. utilities due to perceived supply reliability issues. However, apparently CNEIC has adopted a strategy of "pre-positioning" uranium concentrates at the two U.S. uranium converters, Allied-Signal (Metropolis, Illinois) and Sequoyah Fuels Corporation (Gore, Oklahoma). The extent of this "pre-positioning" is reported to be as much as 2.0 million pounds U3O8 at each converter. Also, a shipment of CNEIC uranium concentrates is reported to have entered the United States through the Port of Houston in early 1989.

In the March 6, 1989 issue of Nuclear Fuel, the Chinese were said to have offered to supply Japanese utilities with as much as 2.0 million pounds U3O8/year at sales prices "20% below what its competitors charge for similar quality uranium." The report goes on to state that the Japanese utilities did not display a high level of enthusiasm for the offer although source diversification was one of their procurement objectives.

The CNEIC is likely to continue its uranium sales program in the United States in an attempt to capture a greater market share. As such issues as supply reliability are resolved, additional contracting is anticipated.

Very little is known regarding the uranium production capacity and production cost structure within the People's Republic of China. It is likely that due to state ownership and control, the production cost is not a relevant factor to the CNEIC. The uranium industry was developed commencing in the 1950's to support the PRC's military requirements. Some reports indicate that China devotes as much as 15 percent of its electrical generation to operating uranium enrichment facilities and that there are at least 17 plutonium production reactors in operation. Moreover, it is thought that a substantial uranium stockpile has been accumulated in the PRC totaling as much as 78 million pounds U3O8.

5.3.2 The Soviet Union

Historically, the Soviets marketed enrichment services through their sales agent, Techsnabexport V.O., under the Ministry of Trade. Enrichment contracting principally took place in Western Europe with agreements involving utilities in Finland, France, Spain, Sweden, West Germany and the United Kingdom. Reportedly, Techsnabexport proved to be a reliable and cost-competitive supplier of separative work units (SWU).

By late 1987-early 1988, the Soviets changed their previous strategy of only offering enrichment services to Western utilities. The needs for hard currency to finance its national programs led to marketing of enriched uranium product (EUP). Reportedly, the Soviets approached their existing enrichment services customers in Western Europe offering to supply EUP instead of only enrichment services. This EUP would be priced at a discount from the prevailing market prices for the constitutent components of EUP (natural uranium concentrates, conversion and enrichment). Under this situation, the natural uranium feed (and conversion component) which were scheduled to be delivered to the Soviets for enrichment would now be "freed-up" and could be sold into the spot market, if desired by the utility. Evidence of these sales of "displaced" material by Western European sources has recently come to light. According to data reported by Nuclear Fuel (March 20, 1989), a number of U.S. utilities have been recipients of uranium and enrichment services marketed through this approach.

Based upon DOE estimates, the potential impact of Soviet-origin uranium and enrichment services in the United States is substantial. Although the DOE figures are being disputed within the industry, it is clear that Soviet nuclear fuel components represent a clear threat to the domestic uranium industry which has already been forced to compete with subsidized Australian and Canadian material.

DOE projects that as much as 2.5 million SWU/year of Soviet-origin could be offered into the United States during the decade of the 1990's. Depending upon the origin of the feed material either contained in EUP or delivered by the utilities involved, the domestic uranium industry could lose potential annual sales of millions of pounds U3O8.

As is the case with People's Republic of China, the Soviet uranium and enrichment industries are shrouded in secrecy, due to their direct link to the Soviet military program. Likewise, production costs under the Soviet system are secondary to other national objectives in the area of international trade and finance. Therefore, Soviet-origin material can be offered at virtually any price. Previous enrichment pricing policies, which established the Soviet SWU price at a discount off the AEC/DOE published price, no matter what the level, set a precedent for this pricing approach.

Nuclear Fuel published an extensive article on the Soviet/China sales in its January 9, 1989 issue. Based upon the responses received principally from European utility fuel managers, additional sales, both spot and long-term, can be anticipated from these two new sources. Although some skepticism remains regarding future supply reliability, Soviet and Chinese uranium and enrichment will continue to effect the nuclear fuel markets for the foreseeable future.

6.0 OUTLOOK FOR THE U.S. URANIUM INDUSTRY

The outlook for the U.S. uranium industry remains bleak. The entrance of non-market countries into a market which is already beset with uncommitted uranium production from Australia and Saskatchewan suggests continued depressed prices for several years.

6.1 URANIUM PRICE LEVELS

The Nuexco Exchange Value, the most widely-recognized indicator of the uranium spot market price, has plummeted by more than thirty percent over the past twelve months to record low constant dollar levels. It is likely that the Exchange Value will continue its decline throughout 1989 and fall to single digit levels prior to year's end.

The EIA uranium price projections contained in the 1987 viability assessment (Table 6.1-1) indicate that a gradual improvement in prices can be anticipated but the $20.00/pound U3O8 level will not be realized until 1995. However, it should be noted that although the 1989 spot price projection is $16.60/pound U3O8 (1987 $) the actual spot price for this year will likely be at least $5.00/pound U3O8 less than that figure. That price differential has significant implications for the EIA forecast throughout the early 1990's which should, in all probability, be revised substantially downward.

Alternative price forecasts available from commercial sources generally agree that prices will remain below the $20.00/pound U3O8 level for several years. None of these forecasts take into account the sales activities and potential market penetration of the Soviet Union and, therefore, will likely be revised downward in the future.

6.2 U.S. URANIUM PRODUCTION TRENDS

Historical domestic uranium production and EIA's forecast production levels through the year 2000 are given in Table 6.2-1.

As shown, domestic uranium projection peaked in 1980 at a level of 43.7 million pounds U3O8. Production fell to a mere 11.3 million pounds U3O8 in 1985, a decline of almost 75 percent in only five years. U.S. production of concentrates increased slightly in the 1986-1988 period (recent estimates for 1988 indicate a total domestic production rate of 13.5 million pounds U308 as opposed to the EIA forecast of 11.5 million pounds U308).

Persistently depressed spot market prices are likely to result in reductions in domestic uranium production at least until the mid-1990's, if not longer. This conclusion is borne out by the EIA forecasts (Table 6.2-1). In reality, however, production cutbacks could be even greater as low uranium prices cause producers to reduce their activities and curtail any plans for expansion or development of new production facilities. Moreover, some domestic producers are making deliveries under sales agreements negotiated during the late 1970's when commercial terms more favorable to the supplier were available. As these agreements expire, those producers may not be able to compete in the current uranium market or may chose to terminate their uranium operations due to poor market conditions and uncertain prospects.

Another likely outcome of current market conditions will be further consolidation of the domestic uranium industry as producers attempt to lower overall costs through the acquisition of low-cost production sources. This consolidation and further concentration will, in all probability, involve non-U.S. mining firms and utilities which have demonstrated a desire to diversify into the U.S. and are willing to take a long-term perspective on the domestic uranium industry.

The concept of "lead times" is of crucial importance when evaluating the ability of the domestic uranium industry to react to future national needs. Depending upon the status of uranium production facilities which have been shut down, it is conceivable that the majority of these facilities will have been decommissioned and reclaimed. Therefore, the base-load production capability may have been lost. In this circumstance, the uranium industry would require several years to respond to national needs.

6.3 FINANCIAL CAPABILITY

As is clearly described in Chapter 7 of the 1987 viability assessment, the financial condition of the U.S. uranium industry is tenuous at best. A summary of the financial statistics for the industry for the years 1982-1987 is given in the Table 6.3-1.

Based upon the EIA data, the domestic uranium industry sustained net losses totaling $811.2 million over the 1982-1987 period. Although a net operating income of $32.8 million was attained in 1987, the net operating losses for the years 1984-1986 show an industry in full decline with minimal future prospects.

As has been recognized in the Secretary of Energy's viability determinations, the domestic uranium supply industry cannot expand to meet needs created under a supply disruption scenario in the absence of higher uranium prices. The financial community will not provide the funds necessary to bring facilities into production in an environment of depressed uranium prices. This situation is aggravated by conditions in the so-called "long-term" market for multi-year deliveries. The insistence of the U.S. utilities on a direct link between delivery prices and the spot market price at the time of delivery effectively precludes traditional bank financing due to the lack of a secured minimum sales price.

Another traditional source of funding, internal funds generated by operations, cannot provide for expansion either under low sales prices.

In summary, the domestic uranium industry of the 1990's is likely to be characterized by historically low annual production rates and increased concentration as some producers sell off their remaining assets and leave the industry. The industry will continue in weak financial condition which virtually ensures that capital expenditures remain at a minimum and that such traditional mining activities as exploration will not be funded.

TABLE
6.1-1

Long-Term Contract and Spot Market Prices for Uranium Under Current Market Conditions, 1970-2000

(Constant 1987 Dollars per Pound U_3O_8)

Year	Spot Market Price		Long-Term Contract Price	
	Actual Values	Projected Values	Actual Values	Projected Mean Values
Historical[a]				
1970	16.60	--	24.10	--
1971	15.30	--	23.10	--
1972	14.80	--	23.70	--
1973	15.10	--	22.60	--
1974	24.00	--	28.90	--
1975	47.10	--	41.60	--
1976	74.50	--	54.10	--
1977	75.20	--	53.60	--
1978	71.80	--	52.20	--
1979	65.10	--	49.50	--
1980	44.50	--	40.40	--
1981	30.20	--	33.20	--
1982	23.50	--	28.90	--
1983	26.10	--	24.60	--
1984	19.20	--	25.60	--
1985	16.50	--	24.00	--
1986	17.50	--	18.60	--
1987	16.80	--	17.90	--
Projected				
1988	--	14.80	--	16.00
1989	--	16.50	--	17.60
1990	--	17.40	--	18.50
1991	--	17.60	--	18.70
1992	--	18.00	--	19.00
1993	--	18.40	--	19.50
1994	--	19.30	--	20.30
1995	--	20.50	--	21.50
1996	--	22.00	--	22.80
1997	--	23.10	--	24.00
1998	--	24.40	--	25.20
1999	--	25.50	--	26.20
2000	--	26.30	--	27.00

[a] Average Nuexco exchange value for the year indicated.

Note: Figure 5 is a graph of these values.

Sources: Historical – Nuexco, *Monthly Report on the Nuclear Fuel Market* (Denve Colorado, January 1988); Projections in this table were derived using the Uranium Mark Model and methodology described in Appendix C.

TABLE
6.2-1

U.S. Uranium Production Under Current Market Conditions, 1970-2000

(Million Pounds U_3O_8)

Year	Actual Values	Projected Values
Historical		
1970	25.8	--
1971	24.5	--
1972	25.8	--
1973	26.5	--
1974	23.1	--
1975	23.2	--
1976	25.5	--
1977	29.9	--
1978	37.0	--
1979	37.5	--
1980	43.7	--
1981	38.5	--
1982	26.9	--
1983	21.2	--
1984	14.9	--
1985	11.3	--
1986	13.5	
1987	13.0	
Projected		
1988	--	11.2
1989	--	10.1
1990	--	8.6
1991	--	7.7
1992	--	7.6
1993	--	8.0
1994	--	8.4
1995	--	9.6
1996	--	10.8
1997	--	12.8
1998	--	14.1
1999	--	15.5
2000	--	16.1

Note: Figure 6 is a graph of these values.

Sources: Historical – U.S. Department of Energy, *Domestic Uranium Mining and Its Industry: 1983 Viability Assessment*, DOE/S-0033 (Washington, DC, December 1984).

Historical data also come from Form EIA-858, "Uranium Industry Annual Sur (1984-1987); Projections in this table were derived using the Uranium Market Model methodology described in Appendix C.

TABLE
6.3-1

Financial Statistics of the Domestic Uranium Industry, 1982-1987

	1982	1983	1984	1985	1986	1987
	Million Dollars					
Income Statement (Part IV)						
Operating Revenues	1,069.5	857.9	608.9	581.5	444.9	415.8
Operating Income (Loss)	15.4	77.1	(25.5)	(37.2)	(1.5)	32.8
Net Income (Loss)	18.0	43.1	(312.0)	(419.4)	(41.2)	(99.7)
Sources and Uses of Funds Statement (Part II)						
Net Income (Loss)	18.0	43.1	(312.0)	(419.4)	(41.2)	(99.7)
Depreciation, Depletion, and Amortization	240.2	162.6	117.6	92.1	68.5	40.9
Deferred Taxes	11.0	2.1	(28.5)	(112.8)	(6.7)	(12.9)
Other Funds Provided From Operations	66.2	9.9	166.4	207.5	60.5	193.4
Total Funds From Operations	335.4	217.6	(56.3)	(232.7)	81.1	121.8
Disposition of Property, Plant, and Equipment (Book Value)	7.0	31.0	213.7	366.6	25.8	10.6
Debt and Equity	351.2	16.1	77.5	125.0	144.6	81.2
Other Sources	23.0	153.7	178.9	253.4	174.6	117.7
Total Sources	716.6	418.5	413.7	512.4	426.1	331.2
Capital Expenditures (Property, Plant, and Equipment)	123.0	48.4	41.5	39.3	21.1	52.9
Debt Repayment	159.1	183.8	133.5	278.7	192.1	146.4
Other Uses	336.8	153.5	197.3	150.5	204.9	196.8
Total Uses	619.1	385.6	372.3	468.4	418.1	396.1
Change in Working Capital	97.5	32.9	41.4	43.9	8.1	(64.8)
Balance Sheet (Part I)						
Current Assets (Less Inventory)	428.2	380.8	569.0	472.9	488.1	489.9
Inventory	435.0	416.1	430.9	367.8	352.2	301.1
Net PP&E	2,119.9	1,745.0	1,510.4	705.8	600.4	394.8
Other Noncurrent Assets	588.6	727.3	445.1	397.2	330.9	405.1
Total Assets	3,571.8	3,269.0	2,955.5	1,943.7	1,771.5	1,590.9
Current Liabilities	278.9	217.9	369.7	318.7	229.3	272.7
Deferred Liabilities	1,544.9	1,742.9	1,744.4	1,016.3	1,008.9	824.6
Total Liabilities	1,823.8	1,960.7	2,114.2	1,335.0	1,238.1	1,097.3
Equity	1,748.0	1,308.2	841.3	608.6	533.4	493.6
Total Liabilities and Equity	3,571.8	3,269.0	2,955.5	1,943.7	1,771.5	1,590.9
	Ratios (in Percent)					
Rates of Return						
Net Income to Total Assets	0.5	1.3	-10.6	-21.6	-2.3	-6.3
Net Income to Total Equity	1.0	3.3	-37.1	-68.9	-7.7	-20.2
Net Income to Net PP&E	0.8	2.5	-20.7	-59.4	-6.9	-25.3
Funds Flow Measures						
Additions to PP&E to Total Sources of Funds	17.2	11.6	10.0	7.7	5.0	16.0
Leverage Measures						
Deferred Liabilities to Total Equity	88.4	133.2	207.3	167.0	189.1	167.1
Deferred Liabilities to Total Assets	43.3	53.3	59.0	52.3	57.0	51.8
Liquidity Measures						
Current Ratio	3.1	3.7	2.7	2.6	3.7	2.9
Liquidity Ratio	1.5	1.7	1.5	1.5	2.1	1.8

Notes: Data have been revised since the publication of the 1986 and 1985 viability assessment reports. Totals may not equal sum of components due to independent rounding.

Sources: 1982-1983 – Energy Information Administration, Form EIA-834, "U.S. Uranium Industry Financial Survey"; 1984-1987 – Form EIA-858, "Uranium Industry Annual Survey" (1984-1987).

6.4 ALTERNATIVES AVAILABLE TO ASSIST INDUSTRY

The Secretary of Energy has now determined that the domestic uranium industry is non-viable for four consecutive years (1984-1987).

Throughout this time the uranium industry has sought to have DOE fulfill its responsibility to preserve a viable domestic industry by imposing restrictions on the enrichment of foreign uranium pursuant to section 161(v) of the Atomic Energy Act. This effort has not been successful. Furthermore, the Reagan Administration, in negotiating the Free Trade Agreement with Canada, agreed to exempt Canadian uranium from any restrictions which might be imposed under section 161(v).

Despite the exemption of Canadian uranium, the imposition of restrictions under section 161(v) remains an alternative for assisting the domestic industry, particularly in light of increasing imports from non-market countries. Clearly the problem of imports of uranium or enriched uranium from these countries at below cost represents a serious threat not only to the viability of the uranium industry but also to the economic health of the government enrichment enterprise.

The continuing problem of Canadian subsidies must also be addressed. The pervasive system of Canadian government ownership, financing and subsidy of its uranium industry, which was untouched by the Free Trade Agreement, continues to put the domestic uranium producers at a competitive disadvantage.

Because Canada produces about 32 million pounds of uranium a year while using only 6 million, the impact of Canadian imports can be huge. Voluntary limits on Canadian imports would not be inappropriate under these circumstances.

During the last Congress the Reagan Administration supported a program of assistance for the uranium industry which included a five-year, $750 million program for the purchase of domestic uranium. It is estimated that this program would have increased the demand for domestic uranium by some six million pounds a year over its five-year duration.

A purchase program of this scope continues to be an effective alternative for restoring a viable uranium industry. Not only would it increase the market for domestic uranium substantially, it would also help firm uranium prices generally during the critical period while the inventories accumulated in the late 1970s are being eliminated. Because the purchased uranium could be used by DOE to lower its enrichment costs, the net cost of the purchase program would be less than $300 million over five years.

Short of such a purchase program, any action which would encourage U.S. utilities to buy more domestic uranium under contracts with predictable prices would be helpful. Some utilities buy a certain percentage of their uranium requirements from domestic producers as a matter of policy. Others buy solely on the basis of price, irrespective of source. It is possible that utilities -- and the commissions that regulate them -- would be responsive to a national policy of encouraging utility purchases of at least 50 percent domestic uranium in order to preserve a domestic industry and supply diversity.

LIST OF APPENDICES

(Available Upon Request)

APPENDIX A

AN INSIGHT INTO UTILITIES' DIVERSIFICATION POLICY, P. VERBEEK 13TH ANNUAL SYMPOSIUM, URANIUM INSTITUTE, LONDON SEPTEMBER 1988

APPENDIX B

AUSTRALIAN URANIUM INDUSTRY, NEW YORK NUCLEAR CORPORATION, JANUARY, 1986

APPENDIX C

AUSTRALIAN LABOR PARTY PLATFORM, CONSTITUTION AND RULES, 1984

APPENDIX D

CANADIAN URANIUM INDUSTRY, NEW YORK NUCLEAR CORPORATION AUGUST, 1986

APPENDIX E

CANADIAN POLICY ON FOREIGN OWNERSHIP OF URANIUM RESOURCES NEWS RELEASE, DECEMBER 23, 1987

APPENDIX F

CANADIAN INTERPRETATION OF FREE TRADE AGREEMENT, PROVISIONS ON URANIUM UPGRADING, DECEMBER 23, 1988

APPENDIX G

DRAFT BACKGROUND PAPER ON GOVERNMENT SUPPORT FOR CANADIAN URANIUM INDUSTRY PREPARED FOR UPA, 1987

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